

Volume 8

Pages 1533 - 1767

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA

BEFORE THE HONORABLE EDWARD M. CHEN, JUDGE

IN RE TESLA, INC. SECURITIES)
LITIGATION.) No. 18-cv-04865-EMC
_____)
San Francisco, California
Tuesday, January 31, 2023

TRANSCRIPT OF TRIAL PROCEEDINGS

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(Appearances continued, next page)

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1 Tuesday, January 31, 2023

8:09 a.m.

2 P R O C E E D I N G S

3 (The following proceedings were held outside of the
4 presence of the Jury)

5 **THE COURTROOM DEPUTY:** All rise. Court is now in
6 session, the Honorable Edward M. Chen is presiding.

7 Court is calling the case in regarding Tesla Securities
8 litigation, Case No. 18-4865. Counsel, please state your
9 appearances for the record, beginning with the plaintiffs.

10 **MR. PORRITT:** Good morning, Your Honor. Nicholas
11 Porritt of Levi & Kosinsky on behalf of plaintiff and the
12 class.

13 **MR. SPIRO:** Good morning. Alex Spiro of Quinn Emanuel
14 on behalf of the defendants.

15 **THE COURT:** Good morning, Mr. Spiro. I hope you all
16 had a good break.

17 We seem to be returning to our old ways here, with 70
18 pages of charts. I'm going to issue rulings this morning so
19 you have them all, but I did want to talk to you about a couple
20 of those.

21 **MR. SPIRO:** Yes, Your Honor.

22 **THE COURT:** One general question is about the slides.

23 **MR. PORRITT:** Yes, Your Honor.

24 **THE COURT:** You are intending to introduce those not
25 just as demonstratives but as exhibits?

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1 **MR. PORRITT:** Some of them as exhibits, some of them
2 as, just as demonstratives, I think, Your Honor.

3 **THE COURT:** I wasn't sure I could discern which one
4 was --

5 **MR. PORRITT:** Well, yeah, I'm not sure that was clear
6 on our submission. I think we listed them all as potential
7 exhibits, which I think they are all admissible as potential
8 exhibits, they are all prepared by the witness and I think they
9 are all based upon evidence that's admissible, or they're
10 summaries of evidence that is admissible. So we think they are
11 all admissible as exhibits. I don't think we are planning to
12 move them all into evidence.

13 **THE COURT:** Have you designated which ones you intend
14 to move into evidence?

15 **MR. PORRITT:** In my outline, Your Honor, but perhaps
16 not to defendant at this point. So --

17 **MR. SPIRO:** Your Honor, from our perspective that
18 creates an unfair surprise and it's sort of unfair to the
19 defendants because we don't then have an opportunity to address
20 each one specifically.

21 The broader point that I would make is this is just an
22 end-around rule, the expert reports and their exhibits don't
23 come into evidence. And I know the Court is well familiar with
24 that rule. This device, whatever you want to call it that
25 plaintiffs are trying to use, I've seen attempted and failed in

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1 many other cases because again, it's just, it's obvious what it
2 is and it's improper and we are objecting.

3 **THE COURT:** Okay. Well, here's my take, just to cut
4 to the chase.

5 **MR. SPIRO:** Okay.

6 **THE COURT:** Generally it is not appropriate to sort of
7 have full summaries of the argument brought in through a
8 witness exhibit like this through a slide. As a demonstrative,
9 that's one thing. As an exhibit it's something else.

10 However, the exception would be, especially given the
11 nature of this case where we have got conclusions that are
12 based on -- as you all stipulated to, I think, on the verdict
13 form -- a big chart with numbers and things, to expect the jury
14 to take notes and say, you know, for each option period -- so
15 there is value to having his -- if he so testifies, in adopting
16 particular numerical, voluminous kinds of conclusions, it
17 meets, if not the letter, perhaps the letter, the spirit of
18 1006, that's the kind of thing I would allow.

19 But quoting from articles and quoting from analysts,
20 that's testimony. That's --

21 **MR. SPIRO:** Right. So a couple of things about that,
22 Your Honor. We appreciate the ruling and guidance because it
23 will save us time here.

24 The first thing is some of the summaries and what have you
25 are not actually expert opinions that were part of his report

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1 that were noticed and properly noticed and governed by the
2 federal rules in terms of notice. So there's a second problem
3 that creates major issues for this case if he's allowed to give
4 opinions that he did not already give.

5 Secondly, as to the exception to what Your Honor's
6 suggested ruling is, being that he can then in essence hand the
7 jury their answer to the verdict form, we think is most
8 problematic of all, frankly, because he should not be allowed
9 to do that.

10 The 1006, you know, compilation of things is not an
11 end-around an opinion disguised as a compilation.

12 **THE COURT:** So what do you propose? That he just go
13 through and verbally show it, and then have them make notes,
14 and we sit here for an hour while they make their own graphs
15 and they put in each of the variables in there? That's -- just
16 to sum up his testimony?

17 **MR. SPIRO:** Well, listen, you know, the plaintiffs get
18 to put on their case, they get to attempt to prove damages.
19 The law requires them to prove damages with certain
20 particularity.

21 **THE COURT:** Yeah.

22 **MR. SPIRO:** The law does not allow them to give the
23 jury a cheat sheet to a verdict form. It would be the most
24 prejudicial of all possible exhibits that ever go into a case.
25 It would be the essence, saying, you know, our expert testifies

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1 to materiality, here's him saying that it is material, with his
2 raised seal. Look, his raised seal is on the expert report and
3 it says the word "Material."

4 **THE COURT:** Well, they would have heard the testimony,
5 they would have heard the cross-examination. They will hear
6 the rebuttal that says this is all hogwash, it's way off. So
7 it's just a summary of his testimony, which is subject to
8 cross-examination, rebuttal, which I'm sure we will hear.

9 **MR. SPIRO:** But the way it works is they can ask for
10 his testimony to be read back, they can -- they can take notes,
11 they can do the things that they can do with every other part
12 of the case. I mean, Your Honor said it, even when I was
13 showing the jury in-evidence undisputed board minutes and I was
14 passing it around in hard paper, the Court's initial reaction
15 was: Well, Jeez, that is a different medium, that has a
16 different impact; I don't think I want you to do that right
17 now. And I understood the Court.

18 Here we are literally --

19 **THE COURT:** Because there was a ready alternative, and
20 that is doing what we have been doing throughout the whole
21 trial, to show it on it the screen.

22 **MR. SPIRO:** I don't want to reopen
23 Handing-board-minute-gate.

24 **THE COURT:** I'm just saying that's distinguishable. I
25 understand your point about emphasis. But there was no need in

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1 that case. Here, there is an arguable countervailing need
2 because of the new -- if this was about three numbers, I'd say
3 yeah, you know

4 **MR. SPIRO:** But Your Honor, I have sort of two
5 responses to that. One is, listen, they can put on any case
6 they want. They can sum up and say: We want a billion. We
7 want a billion even, and this is why. If they want to do it
8 this way they have to prove it.

9 The essence of what Your Honor was saying, from my
10 perspective, is essentially a directed verdict. It's: Here's
11 the answer to the test.

12 The other thing that I think is very, very crucial for the
13 Court to understand and consider here is the jury won't then
14 have the calculations. Right? So they'll have the answer to
15 the test, they'll have the answers to fill in in their sheet,
16 but they will only have the answers. They won't have anything
17 else.

18 The proper way, if the jury needs more information on
19 this, is for a tautologically strong presentation by
20 Mr. Porritt and his direct examination, is they will have the
21 demonstratives in the moment to be taught; they can ask for the
22 testimony to be read back.

23 But I'm not aware of any case in any district where a jury
24 has ever been handed the expert's damages calculations. In
25 fact, I would be stunned if there is such a case. Because it's

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1 the opposite of what you do. It's essentially giving -- it's
2 giving them a form in the jury room where they can just compare
3 the two, and say: Okay, the number to No. 11 is 72. They
4 don't even know what that number is based on. They don't know
5 anything, other than it is just handed to them and they're
6 told.

7 **THE COURT:** Let me ask you this. If the jury has the
8 right to ask for readback, do they have the right to ask for
9 demonstratives?

10 **MR. SPIRO:** If that -- typically -- I mean, I can tell
11 the Court, typically the answer is no. That would be at least
12 a balance, frankly, that while the testimony is being read
13 back, if the same demonstrative was being used, that is a
14 balance that I would need a moment to consider. And I at least
15 can see where the Court is coming from.

16 Where I cannot see is handing them the answer to the exam.
17 Which is also why any demonstrative that's ever used in a case
18 that has anything to do with the verdict form is, per se, not
19 admissible for that very reason.

20 **THE COURT:** All right. What's your response, briefly,
21 Mr. Porritt? Why not keep everything as a demonstrative, and
22 if the -- figure out what kind of instruction, but if the jury
23 wants to look at it because they can't take notes on the
24 ultimate charts that you have, they could do that.

25 **MR. PORRITT:** I mean the jury -- first of all, I think

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1 it is clearly admissible as a summary of voluminous evidence
2 under Rule 1006. So I think these are summaries of, by expert
3 testimony --

4 **THE COURT:** Does anybody have any case law on this
5 point by chance?

6 **MR. SPIRO:** All of the advisory opinions in the
7 cases -- and we cite some of them but there are many -- all of
8 the examples of a 1006 is never, ever, ever the expert's own
9 calculations, right?

10 **THE COURT:** Why wouldn't it meet the letter of 1006?
11 What's missing here?

12 (Off-the-Record discussion between counsel)

13 **MR. SPIRO:** It's to prove the content of -- the
14 content of voluminous writings, recordings or photographs that
15 cannot be conveniently examined in court, meaning the kind of
16 thing you can't have testimony about. It's not the answer to
17 the test, the answer to the ultimate jury question.

18 It's -- where you see this is an FBI agent checks 100 IP
19 addresses. Somebody checks 100 websites. Things like that.
20 It isn't the answer to the test. That's something that is
21 exactly what can be examined in court.

22 It's also not something that the Court would want to be
23 subject to cross-examination. Or it effectively deprives the
24 defendant of due process, deprives the defendant of --

25 **THE COURT:** Well, I wouldn't say that. I mean, 1006

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1 requires that the underlying material be made -- either given
2 or made available to the defendant. Precisely because they
3 could cross-examine. Correct?

4 **MR. SPIRO:** Correct. But where the courts draw the
5 line is, to use the example I just gave, is: Okay, but on the
6 -- are these the thousands -- is this the thousand IP addresses
7 the agent visited? That isn't the kind of thing that goes to
8 the ultimate issue or warrants the same cross-examination
9 concerns.

10 As opposed to the FBI making a chart about why he thinks
11 the defendant is guilty, and he says: Oh, well, it's just a
12 1006, it's just a compilation. Anything's a compilation. It's
13 a compilation of my opinions about the case made in --

14 **THE COURT:** What would be your view if I were to go
15 with the demonstrative readback idea, about how we would
16 instruct the jury so they would know that if that's what they
17 want to do, that's an option?

18 **MR. SPIRO:** Yeah, I mean, the Court -- I'll say, just
19 based on -- I would ask for a quick -- right. The other way to
20 think about 1006 is it can't swallow the expert report rule,
21 right? That's exactly why the Court's instincts here are
22 correct, is that -- right -- underlying voluminous exhibit is
23 also an expert report (indicating quotation marks). So 1006
24 allowed for opinions to be --

25 **THE COURT:** Back --

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1 **MR. SPIRO:** Back to your question. So I will answer
2 the Court specifically, because I want to look at the law on
3 this. I know that in terms of -- that there is some discretion
4 that courts are given. I don't believe, to the point I made
5 earlier, there is any discretion on the topic we were
6 discussing when this started.

7 In terms of making a readback and other things digestible,
8 I would just simply say to the Court that by the intermission
9 today, I will have an answer for a specific view on that point.

10 But my reaction is that at least inherently, there is more
11 flexibility than handing something to the jury in the jury room
12 that has answers to the test.

13 **THE COURT:** What's wrong with that, Mr. Porritt? That
14 if he -- that the proper way to do this -- what's wrong with
15 the idea of he can show it as a demonstrative, he can go
16 through, explain how he got that, and then if the jury wants to
17 see it, they want to be able to look at the numbers, their
18 choice --

19 **MR. PORRITT:** Your Honor, first of all, I think these
20 sorts of summary charts for inflation are routinely admitted at
21 trials at securities class actions. So, you know --

22 **THE COURT:** Do you have case law to --

23 **MR. PORRITT:** In *Vivendi* they filled out almost a
24 300-page verdict form with individual inflations on a daily
25 basis. That was done -- they weren't doing that off memory. I

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1 don't think they were doing it off a demonstrative.

2 **THE COURT:** Did you have any case law to demonstrate
3 or that says that?

4 **MR. PORRITT:** We can -- we can -- I don't think
5 there's a reported decision on how that exhibit was admitted.

6 **THE COURT:** I'll take an unreported decision.

7 **MR. PORRITT:** I don't think there's a slip opinion
8 available. But more pragmatically, Your Honor, they will be
9 able to cross-examine -- this is Mister -- Dr. Hartzmark's
10 calculation of inflation -- let's just do the stock chart --
11 the seven days, he calculates what he thinks the artificial
12 inflation is.

13 They have their own expert who will have his own views on
14 what the inflation is. They will be able to cross-examine
15 Mr. Hartzmark and say: It should be zero on this day, or you
16 say \$66, it should be \$20. Or whatever it may be. The jury
17 can make its own decision. That's what the jury gets to
18 decide.

19 So their expert would have been able to present -- would
20 have been able to present --

21 **THE COURT:** All right, what's the order of witnesses
22 this morning?

23 **MR. PORRITT:** It's Mr. Arnold, and then Professor
24 Heston, and then it is Dr. Hartzmark.

25 **THE COURT:** So you probably won't get to

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1 Dr. Hartzmark, Mr. Hartzmark, until after the first break?

2 **MR. PORRITT:** Depends on cross-examination. I think
3 my -- Mr. Arnold is very quick. My main examination of
4 Professor Heston is approximately 30 minutes.

5 So I don't know what defendant's cross-examination of
6 Professor Heston is going to be.

7 **THE COURT:** All right. Well, at this point we're
8 going to -- I'm going to allow the slides as demonstratives.
9 But I have at least until the break, I don't have to decide
10 right now when they actually come into evidence. I'll reserve
11 ruling. If you move it into evidence, I'll -- and you're going
12 to object, then I'll just reserve ruling.

13 **MR. SPIRO:** Right. We are objecting to all of them
14 coming into evidence.

15 **THE COURT:** I understand.

16 **MR. SPIRO:** And have specific objections to many of
17 them if we were to -- because then we would be bound by all the
18 rules of evidence, and none of which would pass muster as to
19 each individual slide. Just as long as -- I know we have
20 limited time before the first witness comes in but there's a
21 couple of issues on those fronts that I just want to be clear
22 about.

23 First of all, when the trial started, I made this point,
24 and Mr. Porritt agreed and the Court agreed, but I want to
25 revisit it now because I just heard it in Mr. Porritt's

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1 colloquy, which is we don't have an obligation to call an
2 expert. We very well may not call an expert. There's
3 burden-shifting. They're not allowed to refer to our expert in
4 any way, shape or form, period, full stop.

5 Second thing is I wanted to just alert the Court that as
6 the end of this trial is fastly approaching, one of the
7 directors, Linda Johnson Rice, has a brain tumor, and is blind,
8 and has an aide. And I'm asking the Court to allow her to
9 testify remotely. So I didn't want to -- I didn't want to wait
10 until the end of the day and make that application.

11 **THE COURT:** All right. And that's your witness, then?

12 **MR. SPIRO:** That's our witness, yeah. I don't expect
13 there to be an issue, but I wanted to --

14 **MR. PORRITT:** No, not at all, Your Honor.

15 **THE COURT:** Okay.

16 **MR. SPIRO:** And then --

17 **THE COURT:** Make sure you work with Vicky about making
18 sure the logistics work.

19 **MR. SPIRO:** I'll have somebody better at technology
20 help with that.

21 **THE COURT:** Okay. All right.

22 **MR. SPIRO:** The other just quick thing -- since Dave
23 Arnold is the first witness -- that we've sort of been leaving
24 a little bit, I think, in abeyance, which is the Court spent a
25 great deal of time and energy during the bellwether exhibits

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1 and in other comments talking about how sort of news articles
2 and other things, you know, have great concern for the Court
3 because, you know, they have the opportunity to mislead, and
4 it's an end-around hearsay and everything else.

5 There's a couple of edits to even Exhibit 171 that have
6 not been -- which is the *New York Times* story. The two edits
7 that we think are completely consistent with what the Court
8 said -- specifically said during the bellwether ruling -- and I
9 could go line by line and make more requests, but to be
10 conscious of the Court's time, one is there's a reference to
11 the Azealia Banks story which the Court ruled is inadmissible.
12 And we spoke to plaintiffs, and there's no objection to that
13 redaction, as I understand it.

14 **MR. APTON:** (Shrugs shoulders)

15 **MR. SPIRO:** And then the second redaction is there's a
16 phrase in the *New York Times* story which is the writer's
17 conclusion or what have you where it says: "Those two words
18 helped propel Tesla's shares higher," which is the conclusion
19 -- which is what this whole case is about, and we firmly
20 dispute. So we're asking for that to be redacted.

21 The only other exhibit that's at issue in Dave Arnold's
22 testimony is Exhibit 342. This is an internal email of Tesla
23 employees. It includes, from my perspective, three levels of
24 hearsay. It's not being offered for anything beyond the truth.

25 **THE COURT:** Had I not ruled on the Arnold?

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1 **MR. SPIRO:** You -- you did sort of as -- as a whole,
2 but I wanted to just focus the Court -- and I've understood the
3 Court's rulings that occasionally, if I think something is of
4 great difference or moment and there's a blanket ruling, that
5 I'm at least -- I have like kind of like a one -- in any event,
6 it's a very brief --

7 **THE COURT:** Okay. What is it?

8 **MR. SPIRO:** It's -- again, it's triple hearsay, and
9 it's only offered for the truth of the matter asserted. And it
10 can't be offered for Mr. Musk's state --

11 **THE COURT:** Which part? Which part? Looking at it.

12 **MR. SPIRO:** It's a -- it's a reporter's take on a
13 source repeated to a PR person, repeated up the chains
14 within --

15 **MR. PORRITT:** Your Honor, we don't intend to use 342
16 today.

17 **MR. SPIRO:** Okay. So, then, if that's withdrawn --

18 **THE COURT:** All right.

19 **MR. SPIRO:** And then I also --

20 **THE COURT:** I assume you want a redaction. Do you
21 have any problem with that?

22 **MR. PORRITT:** We -- we disagree with both -- we
23 haven't heard of the Azealia Banks redaction before now, so I
24 don't believe that's been discussed.

25 **MR. SPIRO:** We spoke to Mr. Apton.

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1 **MR. PORRITT:** And -- and we certainly would strongly
2 disagree with the description of the -- of the -- the
3 journalist's description of it propelling the market price. I
4 mean, that's completely consistent with Your Honor's ruling
5 about news stories during the class period. And there's
6 numerous -- I don't know -- understand the reasoning for this
7 objection, because there are obviously numerous analyst
8 reports.

9 **THE COURT:** Can you show me a paragraph? Where is it?

10 **MR. SPIRO:** Yeah, and I just -- so let me -- there's a
11 few things going on here. I understand 342 is being withdrawn,
12 as to Dave Arnold. I also understood during a break that 303
13 is being withdrawn during Dave Arnold.

14 **MR. APTON:** (Nods head)

15 **MR. SPIRO:** So --

16 **THE COURT:** All right.

17 **MR. SPIRO:** -- that's -- so --

18 **MR. PORRITT:** That's correct.

19 **MR. SPIRO:** Okay. So that -- that ends the Dave
20 Arnold's questions.

21 As to the *New York Times* story, we're going to -- we can
22 pass it up, but --

23 **THE COURT:** Yeah, why don't you pass me up the
24 segments you think should be redacted.

25 **MR. SPIRO:** It's the second page at the top, which --

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1 which is (As read):

2 "What Mr. Musk meant by 'Funding secured' has
3 become an important question."

4 **MR. PORRITT:** Right.

5 **MR. SPIRO:** Right. And then it says (As read):

6 "Those two words helped propel Tesla's shares
7 higher."

8 Does the Court see where I'm...

9 **THE COURT:** 171.

10 **MR. SPIRO:** Page 2, top.

11 (The Court examines document)

12 **THE COURT:** And then what --

13 **MR. PORRITT:** Your Honor, this is the -- this is --
14 this is a --

15 **THE COURT:** Hold on.

16 **MR. PORRITT:** Sorry. I apologize, Your Honor.

17 **THE COURT:** This is the other --

18 **MR. SPIRO:** So that's the main -- I don't think the --
19 I don't mean this as casting aspersions on the plaintiff's
20 team. I don't think the plaintiffs remember one conversation
21 about this. So the other redaction I don't think is of -- is
22 as of much controversy.

23 There's just a link in the article to the Azealia Banks
24 story that the Court ruled inadmissible. So all we asked was
25 for that be redacted.

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1 But this is the more critical piece. And again, I don't
2 mean to use plaintiff's counsels' words against them, but what
3 Mr. Porritt just said and what he's said many times in this
4 case is that they are intending to use this for an improper
5 purpose.

6 So, I don't understand under any theory of the rules of
7 evidence or anything that the Court has said to date -- again,
8 the article the Court ruled in, the Court expressed for many
9 pages and in the bellwether decision, grave concerns. And, I
10 mean, I can read that if the Court --

11 **THE COURT:** Let me -- let me get Mr. Porritt's
12 response.

13 **MR. SPIRO:** Sure.

14 **MR. PORRITT:** I mean, this is a classic -- what we've
15 been talking about, the slice of the market or the inside of
16 the market. This is a -- the *New York Times*, which is a media
17 reporting, during the class period. These are financial
18 journalists. And they're giving their impression of their --
19 of that story.

20 And this is information that was into the market. This
21 was read by an analyst, Ryan Brinkman, who used it to modify
22 his analyst report, or relied on it, part of the information.
23 So this is just part of the information that's available to the
24 market.

25 **THE COURT:** May I --

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1 **MR. PORRITT:** It's not being offered for the truth of
2 the matter asserted. It's being offered -- we're not going to
3 say to the jury: The *New York Times* said "Funding secured"
4 propelled the price higher, therefore, you must believe it.

5 So, and there are numerous -- I mean, the record is
6 replete with references to "Funding secured," to the market
7 price reaction --

8 **THE COURT:** Well, and --

9 **MR. PORRITT:** -- during it.

10 **THE COURT:** And those lines are a predicate to the
11 next, the second sentence, the second line:

12 "But that funding, it turned out, was far
13 from secure."

14 Is that --

15 **MR. SPIRO:** And you don't need -- so in terms of the
16 narrative, you don't need -- you don't need that second
17 sentence (As read):

18 "What Mr. Musk meant by 'Funding secured'
19 became an important question, but that
20 funding, it turned out, was far from
21 secured."

22 That last sentence in this article is the conclusion of
23 the case. This is the principal media article that they're
24 going to rely on. It's going to be up in front of the jury
25 multiple times, multiple times in summation. It's extremely

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1 prejudicial --

2 **THE COURT:** So you're asking to redact just the second
3 sentence?

4 **MR. SPIRO:** Correct. Correct, Your Honor. Which
5 is -- which is, in our -- in our view,-- a most modest
6 compromise, given that we all -- everybody in this room knows
7 what they're going to use it for, whether they directly argue
8 it or just put it in front of the jury a hundred times. And
9 that's exact --

10 **THE COURT:** Right. So I'm --

11 **MR. PORRITT:** And so --

12 **THE COURT:** Hold on.

13 **MR. PORRITT:** Sorry.

14 **THE COURT:** I'm going to sustain that objection and
15 order those redacted. This is not -- those last sentences are
16 not the kind of slice of the market as if an analyst were
17 saying, because of those two words, you know: I think Tesla
18 work -- Tesla's is worth more, blah, blah, blah. That's one
19 thing.

20 For a reporter to then talk about their perception of the
21 market is different than slice of the market, in this instance.

22 **MR. PORRITT:** If I may be heard, Your Honor. Just one
23 argument defendants make repeatedly is that this article is not
24 really about the tweet. It's about all this other stuff that's
25 going on at Tesla. So as long as they are similarly limited to

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1 not -- I mean, this directly goes to that. This addresses --
2 one part of the article is addressing the effect of the tweet,
3 and is talking about the tweet and the going private.

4 And you will hear Doctor --

5 **THE COURT:** But it's about the effect of the tweet.
6 Now it's a reportage of the effect, not an analysis of the
7 effect. Or, as an investor, how it affected me, how it
8 affected my fund, et cetera, et cetera. So it is different.
9 It is one step removed.

10 **MR. PORRITT:** I think, you know, if we're
11 micro-managing and tweeting out individual words, I understand
12 for prejudicial stuff, and I don't think we're going to have an
13 issue with the Azealia Banks. I don't recall that one
14 conversation. But, I don't see a problem with the link. That
15 seems straightforward and that is -- it is prejudicial, and we
16 understand the Judge's bellwether ruling.

17 But this just strikes me as if we start redacting out
18 individual words out of documents, I think that gets very
19 troubling.

20 **THE COURT:** Well --

21 **MR. PORRITT:** I think we should take this as the
22 document should be as it stands. It should go in as it stands.

23 **THE COURT:** All right. My ruling stands. If nothing
24 else, there's a 403 issue here if it has probative value, given
25 the timing of such and given its nature -- that is, it's

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1 reportage of reaction, not reaction, itself, or an analysis,
2 which I think is a primary slice of the market kind of
3 evidence. And it does go to an ultimate question here.

4 And, therefore, under 403, I'm going to order redaction of
5 that. And as far as the other one goes, you can -- you guys
6 can work out the -- the --

7 **MR. PORRITT:** Azealia Banks issue?

8 **THE COURT:** Yeah.

9 **MR. PORRITT:** Okay.

10 **THE COURT:** I do want to ask you, I do have another
11 question. And that is the appendix of articles of Hartzmark's
12 report, Pages 299 through 452. I mean, I looked at it, and
13 it's kind of a mish-mash of stuff. It's all sorts of --

14 **MR. PORRITT:** We'll withdraw that exhibit, Your Honor.
15 It's fine.

16 **THE COURT:** Okay. All right.

17 **MR. PORRITT:** We'll just take that easy.

18 **THE COURT:** All right. Thank you.

19 **MR. PORRITT:** And just briefly, on just some
20 housekeeping.

21 **THE COURT:** Yeah.

22 **MR. PORRITT:** Dr. Hartzmark will be referring to
23 various analyst reports, which we reference in the slides,
24 which are all referenced in his report. And I would just like
25 at this point to move them into evidence, if that's -- I

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1 mean --

2 **THE COURT:** Yeah. You have my ruling, you will have
3 my rulings. I'm largely overruling the objections to reports.
4 I think analyst reports, things about a so-called slice of the
5 market, -- to keep using that phrase, there -- as long as
6 there's not an authenticity question, seems to me it's
7 relevant, it's admissible for a non-hearsay purpose, and if
8 they're authentic, if there's no serious dispute about
9 authenticity, I'm going to overrule the objections, as you will
10 see in my -- the rulings.

11 Now, if he relies on it, and many of these things he says
12 he looked at and he relied upon, there's also a 703 basis, but
13 that's a little more iffy because just because somebody relied
14 on it, it doesn't mean it comes in to evidence. He can talk
15 about it, he can describe it; doesn't automatically make it
16 admissible.

17 So if they're coming in, it's primarily on the basis of
18 the fact that they're independently admissible.

19 **MR. PORRITT:** All right. Very good, Your Honor.

20 **THE COURT:** You will have my ruling on that. I did
21 want to make sure you are aware of the time. I think you are
22 both to roughly -- there's about nine hours left.

23 **MR. SPIRO:** Well, one of us is down to less time than
24 the other.

25 **MR. PORRITT:** It's pretty close between the two, to be

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1 fair.

2 **THE COURT:** Yeah, so I'm just warning you to use your
3 time wisely, because it does include closings. So unless you
4 want to give a ten-minute closing --

5 **MR. SPIRO:** Your Honor, there was one other exhibit
6 that the Court was asking for, I believe, yesterday evening,
7 which is this blurb on CNBC from some random day.

8 **THE COURT:** Yeah.

9 **MR. PORRITT:** Random day? It's on August 7, 2018.

10 **THE COURT:** Yeah, well, we --

11 **MR. PORRITT:** Hardly random.

12 **THE COURT:** Well --

13 **MR. SPIRO:** We have, you know, lots of TV stations and
14 lots of people talking constantly about constant things. They
15 found over the ten-day class period, some snippet that they
16 have taken out of a segment where somebody's giving a legal
17 conclusion about that this is material, and "It's the big
18 number," whatever the heck that means.

19 Unless that person comes to court and is either a
20 slice-of-the-market witness or made an investor decision on the
21 -- on that or has a -- is a legal expert and can talk about
22 materiality for some reason, which they wouldn't be able to do
23 if they came into a courtroom because it's the ultimate issue
24 of fact, that is, we think, for sure not admissible. And we
25 would rely on the Court's own prior rulings on those topics.

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1 **THE COURT:** How is that different from an analyst
2 report or -- you know.

3 **MR. SPIRO:** For the same reason why the exact same
4 ruling that the Court just issued as to the redaction of the
5 *New York Times* story, because he's anything but an analyst.
6 He's drumming up sensationalism in a -- on a talk show. He's
7 not an analyst. He's not a slice of the market. He's a media
8 person who's going: "Oh, look at this, it's the big number,"
9 whatever that means. We can't cross-examine on what "The big
10 number" means.

11 It's highly prejudicial. It's a snippet take out of
12 context as part of a larger show. And it's exactly the same as
13 -- it's the exact same basis that the Court just precluded a
14 reporter from just adding in to something, this is the ultimate
15 issue in this case. That's why they're playing it, right?

16 It has -- by the way, it's not relied on in any -- it
17 doesn't move the market, it's not a slice of life. Right? So
18 it's -- it's none of the exceptions. It's just --

19 **THE COURT:** How do you know it doesn't move the
20 market?

21 **MR. SPIRO:** No -- well, there's not going to be an
22 expert wit- -- well, first of all, because, I mean --

23 **THE COURT:** It's different than the *New York Times*.
24 The *New York Times* is at the close of the period -- or the
25 little -- I mean, its only effect on -- arguably, the way this

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1 case is framed on the market is the disclosure, the final full
2 disclosure, as alleged.

3 So, but something that was -- this CNBC thing was in the
4 middle -- is in the class period?

5 **MR. PORRITT:** 2:08 p.m. on August 7th.

6 **MR. SPIRO:** But, Your Honor, Your -- the Court has
7 already said many times that it moves the -- if an expert is
8 going to say -- I mean, this is -- was the original
9 conversation about the articles at the bellwether exhibits. If
10 somebody says: Okay, this article is important because it
11 moved the market, then all of a sudden the issues of hearsay
12 and everything else don't matter because there's a conclusion
13 that comes from that. Here, it's definitely not that.

14 And how do I know that with such certainty, Your Honor?
15 Well, one thing is logic, which is that of all of the
16 commentary that's going on all day on every single station,
17 this is the snippet that they think moves the market?

18 But here's the better answer which is why it's not
19 admissible, which is, in their 169-page report, 169 pages, they
20 don't mention this once. They don't mention this once. All
21 this is is a way to get a video -- a different medium, clear as
22 day, random commentator, who knows what he's talking about,
23 what his agenda is, no cross-examination, legal conclusion,
24 nothing, no reliability of anything, just to splash it in front
25 of the jury.

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1 **THE COURT:** All right. Give you one second to
2 respond.

3 **MR. PORRITT:** Okay. It's Mike Santoli, who's a
4 regular commentator on CNBC, which is probably the leading
5 financial news channel in the United States, responding
6 directly to the tweet and giving his immediate impressions that
7 "Funding secured" is -- is the relevant part of the tweet.

8 It is edited to remove -- we've removed any attempt to any
9 legal conclusion. He does, in fact, give a long legal
10 conclusion about: This could open Mr. Musk up to legal
11 jeopardy if he's manipulated the market. We've edited all of
12 that out.

13 All it does is says: I read this tweet, and to me
14 "Funding secured" is the big part of it.

15 **THE COURT:** So is your rationale slice of the market
16 and/or effect on the listener of the market?

17 **MR. PORRITT:** Yes --

18 **THE COURT:** Both?

19 **MR. PORRITT:** Yes, Your Honor.

20 **THE COURT:** Okay.

21 **MR. SPIRO:** But no -- but --

22 **THE COURT:** Objection overruled.

23 **MR. SPIRO:** Well, we disagree with the edits.

24 **THE COURT:** I know you -- oh.

25 **MR. SPIRO:** So we just --

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1 **THE COURT:** There's another edit?

2 **MR. SPIRO:** Pardon?

3 **THE COURT:** He's already edited out the legal
4 conclusion part, right?

5 **MR. SPIRO:** Well, no, no, no.

6 **MR. PORRITT:** Yes.

7 **MR. SPIRO:** He says this is what -- the -- this --
8 it's -- again, it's the same thing the Court, most
9 respectfully, and -- I'd ask the Court to at least consider
10 this over the break -- just said with the *New York Times*, which
11 is it is a report. He's not --

12 **THE COURT:** I understand. I understand. For the
13 reasons I've already stated, overruled.

14 **MR. SPIRO:** So can I just ask the Court one final
15 thing before the witnesses come in? Are we allowed to just
16 take -- it's a genuine question. Am I allowed to go through
17 that ten-day period and look at every news station and every
18 reporter and --

19 **THE COURT:** You can counter -- you can counter with
20 your -- with your -- if you have other reports that you want to
21 put in to show effect on the market, counter effects,
22 whatever --

23 **MR. SPIRO:** So I can just -- I can just for an hour
24 just play random news clips, and say nobody cared about this,
25 nobody cared about this, this reporter says this, this reporter

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1 says that, just, you know, it's --

2 **THE COURT:** If -- if you can demonstrate that there's
3 an argument that it has an effect -- that it could have had an
4 effect on the market, on the information available to the
5 marketplace.

6 **MR. SPIRO:** It's a reporter, at his local station,
7 Santa Fe -- whatever, I mean, who -- who --

8 **THE COURT:** If it hasn't -- I've already said, if you
9 can demonstrate it has an effect on the market, I will look at
10 it through the same lens. It works both ways. That's -- so
11 that's why, you know, I've ruled as I ruled. So I'm through
12 with that.

13 Let me ask you the last question. As we look forward to
14 the jury instructions, there is a -- I don't know if you're
15 going to have a stipulation of facts that we can include in the
16 instructions that's different or augmented, or -- I don't
17 remember if we had a stipulation of facts.

18 **MR. SPIRO:** We can confer on that, Your Honor.

19 **MR. PORRITT:** We have a statement of undisputed facts
20 in the pretrial brief, which we may want to look at and add to.
21 It would be nice to add to that.

22 **THE COURT:** All right. If you could give me
23 something, so I don't have to discern that. I don't want to
24 put something in that you all don't stipulate to. But if you
25 could work on that, knowing we're probably going to instruct on

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1 -- soon, Friday.

2 **MR. SPIRO:** Yes, sir. Yes, Your Honor.

3 **MR. PORRITT:** What -- I hate to -- one more -- we have
4 met and conferred with defendants, and we anticipate closings
5 being on Friday at this point, Your Honor. So we would -- that
6 would -- we would -- that would suggest under the current
7 protocols that any demonstratives to be used at closing would
8 be disclosed tomorrow morning, on Wednesday, which we would
9 propose to comply with.

10 **THE COURT:** I think that's --

11 **MR. PORRITT:** We just wanted to make sure that --
12 confer with the Court on that.

13 **THE COURT:** Yeah. I would think closing are going to
14 be on Friday at this rate, if you're going to use up all your
15 hours. Doesn't sound like you're going to end early. And,
16 yeah, my usual disclosure rules apply as to both exhibits and
17 demonstratives.

18 **MR. SPIRO:** So Your Honor, the defense hasn't seen the
19 plaintiffs rest, hasn't decided their case, hasn't had a chance
20 to put on their case. So --

21 **THE COURT:** You can do that Wednesday, instead of
22 Wednesday morning.

23 **MR. SPIRO:** That's what I'm asking.

24 **THE COURT:** You can just do it Wednesday afternoon.

25 **MR. SPIRO:** If the -- the Court and parties will learn

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1 soon, my demonstratives are never that interesting. It's going
2 to be a few exhibits. So I don't think it will bother anybody,
3 but I'm just telling the Court candidly that I won't be able to
4 quite meet that deadline.

5 Thank you.

6 **THE COURT:** Okay. So, yeah. We'll do that later.

7 **MR. PORRITT:** Will do, Your Honor.

8 **THE COURT:** Yeah. All right. Let's see if the jury's
9 here. See if they are.

10 (The following proceedings were held in the presence of
11 the Jury)

12 **THE COURTROOM DEPUTY:** All rise for the jury.

13 **THE COURT:** Okay. Have a seat, everyone.

14 Good morning, members of the jury. Welcome back. Again,
15 thank you for your promptness and diligence. Hope you all had
16 a good break.

17 I'm going to give you a chance to do a little early voting
18 here. For those of you who watched the game on Sunday, how
19 many of you thought that the officiating was fair?

20 (No response)

21 **THE COURT:** And how many of you thought it was not
22 fair?

23 (Show of hands)

24 **THE COURT:** Okay, so the verdict is in.

25 All right. So as you'll recall, we are still hearing the

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1 plaintiff's case, and it is now the plaintiff's opportunity to
2 call their next witness.

3 **MR. APTON:** Thank you, Your Honor. Good morning,
4 everybody. The plaintiff calls Mr. Dave Arnold.

5 **THE COURT:** All right.

6 **DAVID ARNOLD, PLAINTIFF'S WITNESS, SWORN**

7 **THE COURTROOM DEPUTY:** Thank you. Please have a seat.
8 Please speak clearly into the microphone. State and spell your
9 first and last name for the record.

10 **THE WITNESS:** David Arnold, D-A-V-I-D, A-R-N-O-L-D.

11 **THE COURT:** Thank you, Mr. Arnold. You might pull
12 that microphone a little closer to you.

13 **THE WITNESS:** Sure. Is that better?

14 **THE COURT:** Yeah, you can also pull the mic up if you
15 want. Thank you.

16 **MR. APTON:** Your Honor, I have a witness binder for
17 the Court, as well as the witness.

18 **THE COURT:** All right.

19 **MR. APTON:** May I approach?

20 **THE COURT:** Yes, you may.

21 (Binders tendered to the Witness)

22 (Binders handed up to the Court)

23 **THE WITNESS:** Thank you.
24
25

ARNOLD - DIRECT / APTON**DIRECT EXAMINATION**

BY MR. APTON

Q Good morning, Mr. Arnold.

A Good morning.

Q In August of 2018, what was your position at Tesla?

A I was global communications director.

Q A senior director, correct?

A Yeah. I was promoted around that time, but yeah.

Q Very good.

And in your role, you interacted directly with Mr. Musk.

Is that right?

A Correct.

Q And now, I'd like to turn your attention to -- in your binder, and it will come up on your screen -- Exhibit 87, which is already admitted and in evidence.

(Document displayed)

Q Let me know when you have it there, sir.

A Yes, I see it.

Q And this is an email from you -- the first email, at least on the bottom, it's from you to Elon, correct?

A Correct.

Q And you're telling him that you found out the *Financial Times* -- this is on August 7, 2018, the day of the tweet.

You're telling him that you found out the *Financial Times* was going to run a story saying that the Saudis had built a 3 to

1 5 percent stake in Tesla.

2 Is that right?

3 **A** Correct. Reporter had contacted us saying they were going
4 to -- planning to publish this, and I was relaying that.

5 **Q** And the time stamp on that email, 8:16 a.m. Pacific.
6 Correct?

7 **A** Correct.

8 **Q** And you told him in your email that the *Financial Times*
9 deadline for the story was 9:00 a.m. Is that right?

10 **A** Correct.

11 **Q** Now, he wrote back to you one hour later, so shortly after
12 the 9:00 a.m. deadline, he wrote back to you at 9:20 and said:
13 "Ok." Did I read that right?

14 **A** 9:20, the time difference is -- I mean, it says "4:20
15 p.m." here. I assume the --

16 **Q** So I -- I should tell you that all the time stamps, or
17 most of the time stamps in our case are on UTC. So if you
18 would subtract seven, you get to -- to 9:20.

19 **A** Understood.

20 **Q** So that tracks for you? You emailed him at 8:16 in the
21 morning, and he emails you back at 9:20, an hour later or so?

22 **A** Correct.

23 **Q** And then we know what time the tweet came out that
24 morning, "Funding secured." That came out at 9:48, right?

25 **A** I don't recall exactly, but I'll take your word for it.

ARNOLD - DIRECT / APTON

1 **Q** Okay. So Elon, after getting your email, and then after
2 responding to you, he sits tight for another half hour before
3 tweeting "Am considering taking Tesla private at \$420. Funding
4 secured." Is that right?

5 **MS. THOMPSON:** Objection. Mischaracterizes,
6 misstates, no personal knowledge.

7 **THE COURT:** Why don't you rephrase that.

8 **BY MR. APTON**

9 **Q** Sir, how much time in between your email at 8:16 a.m. and
10 Mr. Musk's tweet at 9:48 a.m.?

11 **A** I guess that would be about an hour and a half.

12 **Q** That's right.

13 So Mr. Arnold, Elon sits for an hour and a half before
14 tweeting, in between receiving your email and tweeting. Is
15 that right? An hour and a half?

16 **MS. THOMPSON:** Objection, argumentative.

17 **THE COURT:** Pardon?

18 **MS. THOMPSON:** Objection, argumentative.

19 **THE COURT:** Overruled.

20 **THE WITNESS:** There would be -- appear to be an hour
21 and a half time difference between these two.

22 **BY MR. APTON**

23 **Q** Sir, have you ever had to make a split-second decision?

24 **A** Yes.

25 **Q** And in a split-second decision, as the name implies, you

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1 have a split-second to make that decision. Is that right?

2 **A** Yes.

3 **Q** And one, one -- not an hour and a half, then, that's for
4 sure; right?

5 **A** If it's a split-second decision, I would imagine it --
6 split-second.

7 **Q** Right. Well, that makes sense.

8 And so, one more question. The *Financial Times* article
9 that you had initially noticed -- or notified Elon about, that
10 came out at 9:17, so three minutes before he emailed you back
11 that morning. Is that right?

12 **A** Again, I don't recall exactly when the article came out.

13 **Q** Okay. Let me ask you about one more thing.

14 **MR. APTON:** Can we show Exhibit 12, please, which is
15 already in evidence?

16 (Document displayed)

17 **BY MR. APTON**

18 **Q** On August 7th, Elon and Tesla post this email (Indicating)
19 that's on your screen to their Tesla website. Is that right?

20 **A** Um, this blog was published to our website, yes.

21 **Q** Okay. And, now, at this point we're five days after Elon
22 first made his offer to the board of directors, right?

23 **A** I don't recall when he made such an offer.

24 **Q** But you do know that an offer was made on or around
25 August 2nd? Does that sound right?

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1 **A** Again, I didn't have knowledge -- knowledge of that at the
2 time. So, not exactly sure.

3 **Q** Okay. But assuming momentarily that he did make an offer
4 on August 2nd to the board by an email, you would agree, or is
5 it your opinion, that he was a bidder at that point in time?

6 **A** I don't recall having a thought about that one way or the
7 other at the time.

8 **Q** Nevertheless, you, Todd Maron, Sarah O'Brien and Deepak
9 Ahuja, you guys draft this email (Indicating) in Exhibit 12, is
10 that right?

11 **A** We did work on this, yeah. We felt it was important to
12 communicate with employees and have something to share with
13 media and other stakeholders.

14 **Q** And if I could just show you Exhibit 504.

15 **MR. APTON:** Which is not in evidence yet, but I'd move
16 to admit. I don't think there's objections.

17 **THE COURT:** Okay, no objection, it will be admitted.

18 **MR. APTON:** Thank you, Your Honor.

19 (Trial Exhibit 504 received in evidence.)

20 (Document displayed)

21 **BY MR. APTON**

22 **Q** Sir, this is an email from you at the bottom. You sent a
23 quick and dirty draft of that blog post, of that employee
24 email; is that right?

25 **A** It would appear so, yes.

ARNOLD - DIRECT / APTON

1 **Q** And if I could show Exhibit 505, which I believe is the
2 attachment to 504.

3 **MR. APTON:** And I don't believe there's any objection
4 to that as well.

5 **MS. THOMPSON:** No objection.

6 **THE COURT:** Admitted.

7 (Trial Exhibit 505 received in evidence.)

8 (Document displayed)

9 **BY MR. APTON**

10 **Q** You see in the first paragraph there?

11 **A** I do.

12 **Q** It says (As read):

13 "...I announced we're considering taking
14 Tesla private...because sharing this news
15 first publicly allows us to conform to
16 regulatory disclosure rules."

17 Do you see that?

18 **A** I do.

19 **Q** You hadn't spoken to Elon at this point, had you?

20 **A** No, I don't believe so.

21 **Q** So if I could show you side by side the final version of
22 the email, Exhibit 12, and then your draft --

23 **A** Just to be clear, I don't -- is this email -- is this
24 attachment you're showing me --

25 (Document displayed)

ARNOLD - DIRECT / APTON

1 **A** -- to my initial email? Or is that in the --

2 **Q** Yeah, that was your quick and dirty draft, I believe.

3 **MS. THOMPSON:** Objection to Mr. Apton characterizing
4 the document.

5 **THE COURT:** Overruled, but I think what he's looking
6 for is the exhibit number. It's 505?

7 **MR. APTON:** That's correct, Your Honor.

8 **THE COURT:** You want to direct the witness's attention
9 to 505?

10 **BY MR. APTON**

11 **Q** So on your --

12 **THE COURT:** That's the attachment to 504, correct?

13 **MR. APTON:** Correct, Your Honor.

14 **BY MR. APTON**

15 **Q** So, Mr. Arnold, on the left is 505, the quick and dirty
16 draft; on the right is the final version. You see that that
17 first sentence about regulatory disclosures, it's not in the
18 final version. Is that right?

19 (Witness examines document)

20 **A** I haven't read the whole thing, it appears not.

21 **Q** And so let me ask you this: If Elon was truly concerned
22 about regulatory disclosure rules, do you have any
23 understanding then why the sentence was cut from that blog
24 post?

25 **MS. THOMPSON:** Objection, lacks personal knowledge.

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1 **THE COURT:** If he has an understanding, he can
2 testify.

3 **THE WITNESS:** I don't recall. I mean, again, this
4 was -- the initial draft of this post was a collaborative
5 effort. I believe I took the pen on the first draft, but, you
6 know -- getting the content from Deepak and Todd, but I'm
7 not -- you know, not exactly sure what was in or out in that
8 first draft.

9 **BY MR. APTON**

10 **Q** Sure. So if I could show you Exhibit 503, which was
11 already admitted in evidence.

12 (Document displayed)

13 **Q** I just want to direct your attention to that email right
14 here (Indicating) from Sarah O'Brien (As read):

15 "Shall we leave you..."

16 **MR. APTON:** Go up a little bit. Yeah.

17 **BY MR. APTON**

18 **Q** She says that -- (As read):

19 "Yeah, we have the blog post, we'll post it
20 on the blog as a message to our employees."

21 Do you see that?

22 **A** I do.

23 **Q** So the plan was always to take this employee email and put
24 it on the website. Correct?

25 **A** I don't remember the deliberations on this but my

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1 recollection is we were planning to send this to employees
2 first, yes.

3 **Q** Okay. And then put it on the website. Correct?

4 **A** Correct.

5 **Q** Now, if I could show you Exhibit 511.

6 (Document displayed to the Witness)

7 **MR. APTON:** This is not in evidence but I don't think
8 there's any objection to this. I'd move it into evidence
9 without objection.

10 **THE COURT:** Any objection?

11 **MS. THOMPSON:** No objection.

12 **THE COURT:** Admitted.

13 (Trial Exhibit 511 received in evidence.)

14 (Document displayed)

15 **BY MR. APTON**

16 **Q** All right. This is an email chain you were on regarding
17 drafting a press release for Tesla, the Tesla board, on
18 August 8th. Correct?

19 **A** The portion you highlighted I wasn't on. It looks like it
20 was forwarded to me.

21 **Q** And, and you do see here at the bottom here that the board
22 wants to have a statement out, correct?

23 (Document displayed)

24 **A** Let me just read it now.

25 Yes, I see Todd saying that.

ARNOLD - DIRECT / APTON

1 **Q** And then you are tasked with taking care of it, right
2 above there, correct?

3 (Witness examines document)

4 **A** Our team is tasked with it, yes.

5 **Q** Okay. So just for clarification, Elon makes his offer on
6 August 2nd. You guys are then drafting the employee email on
7 August 7th. You are drafting the board statement on
8 August 8th.

9 And then you also proceeded to draft the blog post that
10 was published on August 13th, correct? Exhibit 53?

11 **MR. APTON:** If we could show that to the witness.

12 **MS. THOMPSON:** Objection, compound.

13 **THE COURT:** It --

14 **THE WITNESS:** I don't recall drafting this
15 statement --

16 **THE COURT:** Hold on.

17 **MS. THOMPSON:** It was a long list of things with a
18 question at the end. I don't -- if he's only asking about the
19 last part of his question --

20 **THE COURT:** I think he's only asking about the last
21 part. So, overruled.

22 **BY MR. APTON**

23 **Q** Do you recall drafting this as well with your team?

24 **A** We would have been involved, again, getting the -- the
25 substance from Mr. Ahuja and Mr. Maron.

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1 **Q** All right.

2 **MR. APTON:** Thank you, sir. No further questions,
3 Your Honor.

4 **THE COURT:** All right. Thank you.
5 Cross?

6 **CROSS-EXAMINATION**

7 **BY MS. THOMPSON**

8 **Q** Good morning, Mr. Arnold.

9 **A** Good morning.

10 **Q** You testified that in August 2018, you were a member of
11 the communications team at Tesla. Right?

12 **A** That's correct.

13 **Q** And how many people reported to you in that role?

14 **A** I think it was two at the time.

15 **Q** And in general, when you received a media inquiry, how did
16 you get the information you needed to respond to the media
17 inquiry?

18 **A** We would generally rely on the subject matter experts at
19 the company. If there was an inquiry -- thank you -- if there
20 was an inquiry about, you know, production, we would work with
21 that executive, so on and so forth.

22 **Q** Regarding the take-private transaction proposal from
23 August, 2018, is it fair to say the media coverage about the
24 take-private was not always accurate?

25 **A** I -- yeah. I think there was some coverage that was not

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1 accurate.

2 Q You were just asked about some blog posts, an August 7th
3 blog post and an August 13th blog post. Do you remember that?

4 A I do.

5 Q Okay.

6 MS. THOMPSON: Could we please publish Exhibit 8 to
7 the jury. This is already in evidence.

8 (Document displayed)

9 BY MS. THOMPSON

10 Q And this is a -- the tweet at 9:48 a.m:

11 "Am considering taking Tesla private at \$420.

12 Funding secured."

13 What did you know about this tweet before Mr. Musk posted
14 it?

15 A Nothing.

16 Q And did you have any involvement in drafting this tweet?

17 A No.

18 Q And after you -- after the posting of the tweet, did you
19 start getting media inquiries?

20 A We did.

21 Q And what information did you have for responding to those
22 inquiries?

23 A Nothing.

24 MS. THOMPSON: Can we go to Exhibit 13, I believe it
25 is, which has already been admitted.

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1 (Document displayed)

2 **BY MS. THOMPSON**

3 **Q** This is a tweet at the top here from Mr. Musk:

4 "Investor support is confirmed. Only reason
5 why this is not certain is that it's
6 contingent on a shareholder vote."

7 Did you have any involvement in drafting that tweet?

8 **A** No.

9 **MS. THOMPSON:** We can take that down, thank you.

10 (Document taken off display)

11 **BY MS. THOMPSON**

12 **Q** I want to go to Exhibit 87, which is your email about a
13 *Financial Times* inquiry. Mr. Apton noted that it was sent at
14 8:16 a.m. from you to Mr. Musk.

15 If we could go to the top part of that, Mr. Musk's
16 response, "Ok."

17 What did you understand Mr. Musk to mean when he wrote
18 "Ok"?

19 **A** Um, you know, just confirming receipt, essentially.

20 **Q** And at the time you received the inquiry from the
21 *Financial Times* at -- before 8:16 a.m. on August 7th, did you
22 have any knowledge of the PIF's plans to fund taking Tesla
23 private?

24 **A** Not that I recall, no.

25 **Q** Okay.

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1 **MS. THOMPSON:** I'd like to go to Exhibit 298, which I
2 would move to admit and publish to the jury.

3 **THE COURT:** Any objection?

4 **MR. APTON:** No objection, Your Honor.

5 **THE COURT:** All right. Admitted, you may publish.

6 (Trial Exhibit 298 received in evidence.)

7 **MS. THOMPSON:** Thank you.

8 (Document displayed)

9 **BY MS. THOMPSON**

10 **Q** And this is an email that you sent, we'll go through the
11 time again here, but at the top here it's from you on August 7,
12 2018, and that's at 9:37 a.m. So, again, 4:37 minus seven
13 hours, 9:37 a.m.

14 Do you see that?

15 **A** I do.

16 **Q** All right. And you write here (As read):

17 "The article is out. Share price is going
18 nuts as a result."

19 Do you see that?

20 **A** I do.

21 **Q** And is this referring to the *Financial Times* article from
22 the prior email?

23 **A** I would assume so, yes.

24 **Q** Okay. I'm going to direct your attention to that next
25 paragraph, the last sentence. Says (As read):

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1 "FT writes "Saudi Arabia's investment
2 appeared to confirm Mr. Musk's claim last
3 week that, quote, we certainly could raise
4 money. End quote.'" "

5 Do you see that?

6 **A** Yeah, last sentence of the first paragraph.

7 **Q** Okay.

8 **A** Yes.

9 **Q** And then let's go to the last sentence of the next
10 paragraph. It writes (As read):

11 "Mr. Musk and Tesla are aware of the PIF
12 shareholding."

13 Do you see that?

14 **A** I do.

15 **Q** Does the detail that Mr. Musk and Tesla are aware of the
16 PIF shareholding when there had been no comment from Tesla
17 indicate that the source of the story was someone with
18 knowledge of Mr. Musk's meeting with PIF?

19 **MR. APTON:** Objection, leading.

20 **THE COURT:** Sustained. Rephrase.

21 **BY MS. THOMPSON**

22 **Q** What is your understanding, if Tesla did not comment on
23 the story, of who might have knowledge otherwise of Mr. Musk's
24 meeting with PIF?

25 **A** Presumably --

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1 **MR. APTON:** Objection. Lacks foundation, Your Honor.

2 **THE COURT:** Needs foundation. It's the source of his
3 knowledge. Sustained.

4 **MS. THOMPSON:** Okay.

5 **BY MS. THOMPSON**

6 **Q** Well, Mr. Arnold, sitting here today, based on your
7 current knowledge of Mr. Musk's discussions with the PIF, which
8 you didn't know as of August 7th, what would your reaction be
9 to receiving the inquiry from *Financial Times* and reading the
10 same article?

11 **MR. APTON:** Objection. Calls for speculation,
12 Your Honor.

13 **THE COURT:** I'm not sure I understand the question.
14 Please rephrase it.

15 **MS. THOMPSON:** Okay.

16 **BY MS. THOMPSON**

17 **Q** Mr. Arnold, if you -- would you have any reason to doubt
18 that if the *Financial Times* was publishing a story about the
19 PIF's investment, had a source that knew of the PIF's
20 investment that wasn't Tesla, would you have any reason to
21 doubt that there might be a story that follows relating to PIF
22 wanting to take Tesla private?

23 **MR. APTON:** Objection, Your Honor. Vague.

24 **THE COURT:** Sustained. Calls for speculation, also.
25

ARNOLD - REDIRECT / APTON

1 **BY MS. THOMPSON**

2 **Q** Okay. And in your -- looking at the time stamps her that
3 Mr. Apton took you through, 9:37 a.m., that's about 11 minutes
4 before 9:48 a.m. Would you agree with me on that?

5 **A** I do.

6 **MS. THOMPSON:** We can take this down.

7 (Document taken off display)

8 **BY MS. THOMPSON**

9 **Q** And then, Mr. Arnold, I just want to ask you about
10 Mr. Musk's emails to employees and the blog post that was then
11 published on the website.

12 Why did the email and the blog post come from Mr. Musk as
13 an email to employees?

14 **A** He was the source of -- of information, so it seemed to
15 make sense it would come from him.

16 **MS. THOMPSON:** One moment, please, Your Honor.

17 **THE COURT:** Sure.

18 **MS. THOMPSON:** No further questions.

19 **THE COURT:** All right. Thank you. Anything on
20 redirect?

21 **MR. APTON:** Sorry.

22 **REDIRECT EXAMINATION**

23 **BY MR. APTON**

24 **Q** Mr. Arnold, if we could just look at Exhibit 298 one more
25 time. I have two questions for you.

PROCEEDINGS

1 **MR. APTON:** Can we pull 298 up, please?

2 (Document displayed)

3 **MR. APTON:** Thank you.

4 **BY MR. APTON**

5 **Q** Elon's not on this email (Indicating), is that right?

6 **A** Um, it does not appear so, no.

7 **Q** And second question: This description (Indicating), it
8 does not say that the PIF wanted to take Tesla private, does
9 it?

10 **A** Um, sorry, just a moment. I'm reading it.

11 (Witness examines document)

12 **A** Not that I can see, no.

13 **MR. APTON:** All right. Thank you.

14 Thank you.

15 **THE COURT:** All right. Anything further?

16 **MS. THOMPSON:** No, Your Honor.

17 **THE COURT:** All right. Thank you, Mr. Arnold. You
18 are excused. You may step down.

19 (Witness excused)

20 **THE COURT:** And plaintiff may call their next witness.

21 **MR. PORRITT:** May it please the Court, plaintiff calls
22 Professor Steven Heston.

23 **THE COURT:** All right. Let me tell the reporter I'm
24 having a problem again with...

25 (A pause in the proceedings from 9:08 a.m. to 9:22 a.m.)

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1 **THE COURT:** Okay, first we have to have the witness
2 sworn.

3 **STEVEN L. HESTON, PLAINTIFF'S WITNESS, SWORN**

4 **THE WITNESS:** Yes, I do.

5 **THE COURTROOM DEPUTY:** Thank you. Please speak
6 clearly into the microphone. State and spell your first and
7 last name for the record.

8 **THE WITNESS:** Steven L. Heston. S-T-E-V-E-N, and
9 Heston is H-E-S-T-O-N.

10 **THE COURT:** All right. Thank you, Mr. Heston.
11 You may proceed.

12 **DIRECT EXAMINATION**

13 **BY MR. PORRITT**

14 **Q** Good morning, Professor Heston. Could you please state
15 your current employment, please?

16 **A** I'm a professor at University of Maryland.

17 **Q** And how long have you been a professor at Maryland?

18 **A** I have been a professor for 20 years at Maryland.

19 **Q** And prior to your current position, have you held any
20 other positions in academia?

21 **A** Yes. I was a professor at Yale, then Columbia, then
22 Washington University in St. Louis.

23 **Q** And could you tell me what kind of courses you have taught
24 at the University of Maryland and at those other universities?

25 **A** I've taught corporate governance and introductory

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1 corporate finance. I -- at Columbia, Washington University and
2 Maryland, I've mostly taught options and also international
3 finance.

4 **Q** Can you briefly summarize your educational background?

5 **A** I have received a Bachelor of Economics from University of
6 Maryland in 1983, then I went to Carnegie Mellon University
7 where I did an MBA and received a Master of Finance, and
8 finally a Ph.D. in finance in 1990.

9 **Q** And as part of your career have you authored any
10 peer-reviewed scholarly articles?

11 **A** Yes, I've authored over 20 which appear on my vita.

12 **Q** Okay. And broadly speaking, what are the subjects of your
13 various articles that you publish?

14 **A** Well, about half of them are on options. Either option
15 theory, or more commonly, empirical implementation and testing
16 of those models.

17 **Q** And in addition to working as an academic, have you also
18 spent time working in the private sector?

19 **A** Yes. After being a professor at Yale, Columbia and
20 Washington University, I went to Goldman Sachs in 1998, for
21 four years.

22 **Q** And what was your position at Goldman Sachs?

23 **A** I was a vice-president. Initially I worked on a fixed
24 income trading desk. And then I moved to the asset management
25 division.

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1 **MR. PORRITT:** At this point I would like to show the
2 witness part of Exhibit 368. Specifically, 368, Pages 64
3 through 67.

4 **THE COURT:** Okay.
5 (Document displayed)

6 **BY MR. PORRITT**

7 **Q** Do you see that in front of you, Professor Heston?

8 **A** Yes.

9 **Q** Is that the curriculum vitae that you submitted as part of
10 your work in this case?

11 **A** Yes.

12 **MR. PORRITT:** At this point we would like to move into
13 evidence Exhibit 368.

14 **THE COURT:** Thank you.

15 **MR. ROSSMAN:** Your Honor, it is the expert report. I
16 don't think this is --

17 **THE COURT:** Okay, objection stated, overruled. It is
18 admitted.

19 (Trial Exhibit 368, Pages 64 through 67, received in
20 evidence.)

21 **MR. PORRITT:** Thank you.

22 **BY MR. PORRITT**

23 **Q** Have there been any updates since you submitted this
24 curriculum vitae?

25 **MR. ROSSMAN:** Your Honor, just to be clear, I have no

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1 objection to this CV.

2 **THE COURT:** We are only admitting those pages.

3 **MR. ROSSMAN:** Very good. I misunderstood. 368 is --
4 to be clear, on the record, 368 is the whole expert report.
5 Appendix A to 368, we have no objections.

6 **THE COURT:** Yeah, Pages 64 to 67 in particular.
7 That's the only thing being admitted.

8 **MR. PORRITT:** Yes, Your Honor.

9 **THE COURT:** Thank you.

10 **BY MR. PORRITT**

11 **Q** Has there been any updates to your curriculum vitae since
12 you submitted it in this case?

13 **A** Yes. I had a paper accepted by the *Journal of Finance*
14 last year, called Option Momentum.

15 **MR. PORRITT:** At this point, Your Honor, we would
16 proffer Professor Heston as an expert in the area of options
17 and option pricing.

18 **THE COURT:** All right. Any objection?

19 **MR. ROSSMAN:** We have no objection to the Professor's
20 qualifications. We reserve our objections previously made on
21 the record on *Daubert*, Your Honor.

22 **THE COURT:** All right. And I've ruled on that, and I
23 find that Mr. Heston is qualified as an expert on those topics.

24 **MR. PORRITT:** Thank you, Your Honor.
25

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1 BY MR. PORRITT

2 Q Professor Heston, were you retained as an expert by
3 plaintiff in this matter?

4 A Yes, I was.

5 Q And what was the scope of your engagement?

6 A I was asked to analyze movements in the prices of Tesla
7 options.

8 Q For any particular period?

9 A For the class period, which is August 7th through
10 August 17th, 2018.

11 Q Okay. And could you briefly explain what data you
12 reviewed as part of your engagement?

13 A I analyzed the prices and volume of Tesla stock options
14 over this period.

15 Q And could you briefly describe what a stock option is for
16 the jury?

17 A Yes. A call option is the right but not the obligation to
18 buy stock. And a put option is the right but not the
19 obligation to sell that stock for a fixed price, for a fixed
20 period of time, up until the expiration date.

21 Q And the price that you can buy or sell the stock for, is
22 that called the strike price?

23 A Yes, the strike price or the exercise price.

24 Q Okay. And did you form any opinions regarding Tesla's
25 stock options during the period August 7th to August 17th?

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1 **A** Yes, I formed three opinions.

2 **Q** Okay. And what are those opinions?

3 **A** Well, first, at or shortly after 12:48 on August 7th,
4 there was a very abrupt movement in option prices. So the --
5 this movement was unprecedented.

6 And I suppose my second opinion is that movement had a
7 distinct pattern. The stock price rose, and put options
8 fell -- at least, put options longer than two months, all fell.
9 Which makes sense, because a put option is the right to sell
10 the stock for a fixed price. And when the stock becomes more
11 valuable, that put option is worth less.

12 Short-term options rose slightly, which, this makes sense.
13 A call option is the right to buy, and a call option normally
14 becomes more valuable when the stock becomes more valuable.

15 But very curiously, long-term out-of-the-money call
16 options fell in value. So these were options that would have
17 more than just a few months, perhaps up to a year and a half to
18 exercise. And these are call options with high strike prices.
19 The option to buy Tesla for above its stock, for perhaps 400,
20 500 or \$600. And those long-term call options fell, which is
21 extremely unusual. I looked at 100 previous days, and never
22 saw anything remotely like this.

23 Ordinarily when the stock price rises, call options should
24 rise, since they have the right to buy, and put options should
25 fall. But in this case, I saw divergent behavior between

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1 different types of call options.

2 And my third conclusion is that I can explain these
3 patterns using modern option theory, based on the
4 Black-Scholes-Merton model, which is a theory and specifically
5 a formula which describes option movements in terms of the
6 stock price and volatility.

7 **Q** Thank you, Professor. A few more basic information about
8 Tesla stock options. Where do the Tesla stock options trade,
9 or where did they trade during the class period, August 7 to
10 17, 2018?

11 **A** Well, Tesla stock options trade on an options exchange,
12 just like stocks trade on the New York Stock Exchange or
13 Nasdaq. In this case, the largest options exchange in the
14 country is the Chicago Board of Options Exchange.

15 **Q** And how did the volume of Tesla stock options traded
16 during the class period compare to the volume of stock?

17 **A** It was very large. Tesla is very actively traded, or has
18 very actively traded options. I prepared an exhibit to
19 illustrate.

20 **MR. PORRITT:** At this point I would like to show the
21 witness and publish to the jury a demonstrative, Slide 10.

22 (Document displayed)

23 **THE COURT:** All right.

24 **THE WITNESS:** Yes. So this is just a chart which
25 shows the option and option volume, that is, the amount of

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1 shares traded. Or, given the options, the amount of shares
2 that one has the option to buy or sell, based on those options.

3 The first column shows the different dates throughout this
4 class period. We can see on the top row, August 7th, there
5 were over 30 million shares of stock. Which seems like a lot.

6 And then on the -- the next column, we see that there were
7 options traded to buy or sell 49 million shares of Tesla stock,
8 almost 50 million, which is more. In fact, I think the ratio
9 is 1.62, or 162 percent.

10 And August 7th wasn't unusual. On every day during that
11 class period, the number of shares that could be bought or sold
12 based on the options traded exceeded the number of shares of
13 Tesla stock. So Tesla has one of the most active option
14 markets of any stock.

15 **Q** Can you briefly explain why an investor would decide to
16 trade in options?

17 **A** Yes. A call option, for example, is less risky than
18 buying the stock. Because if you buy the stock at, say, 350,
19 you could lose up to \$350 if the Tesla stock price drops.

20 A call option gives you the right to buy the stock. So if
21 you buy -- buy a call option with a strike price of 350, you
22 pay money for the option, and then you can buy the stock for
23 350 later if it goes up. But if the stock goes down, you lose
24 only what you paid for the option. So it's cheaper if you
25 don't want to invest all the money, and it has less risk,

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1 because you can only lose what you pay for the option. And it
2 gives you only upside gain.

3 **Q** And would you describe investing in options as gambling?

4 **A** No. I wouldn't call them gambling. I think they're more
5 akin to insurance. For example, a put option is the right to
6 sell stock at a fixed price.

7 Let's compare to the call option sample I gave. Suppose
8 that you did decide to buy the stock at 350 -- for 350, or
9 perhaps you already owned the stock, and the current market
10 value of the stock is 350. You could purchase a put option,
11 giving you the right to sell the stock for 350. If the stock
12 goes up, you will make money on the stock.

13 But if the stock goes down, you always have the option of
14 selling it for what you paid, for \$350. And therefore, the put
15 option acts as insurance on your underlying stock, reducing the
16 risk of your investment.

17 **Q** And what are the types of investors who use stock options,
18 puts and calls, in the ways you have just described?

19 **A** Well, of course, some individual investors could use put
20 options. But the big investors are institutions like mutual
21 funds or pension funds. Insurance companies invest. So they
22 all can use options and do use options to manage the risk of
23 their positions. Yes. Basically, portfolio managers who want
24 to adjust the risk and return profile of the stocks they hold.

25 **Q** And could you explain some of the factors that go into

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1 affecting the price of a stock option?

2 **A** Yes. Well, of course, the stock price obviously affects
3 options because when the stock price goes up, that's good for
4 call options that have the right to buy the stock, but it's bad
5 for put options, which have the right to sell the stock for a
6 fixed price.

7 The other really important factor is volatility, which is
8 just a measure of the average fluctuation and percent return.
9 It's measured in percent per year. And that's important
10 because options have limited liability. They have limited
11 losses. You don't have the obligation; you have the right to
12 buy or sell.

13 So options are investments that profit on the upside when
14 the stock goes above the exercise price, and they can buy the
15 stock for less than the market value. And put options are
16 investments that profit on the downside, when the stock goes
17 below the exercise price.

18 So increased fluctuations -- that is, higher volatility --
19 means that there will be bigger movements. And since options
20 have limited liability, when the stock moves the wrong way,
21 their losses are limited. But when it moves the right way,
22 bigger fluctuations mean bigger profits. So volatility is the
23 other factor which is good for both puts and calls.

24 Now, there are some other elements that are not sort of
25 risky; they don't change. The exercise price affects the

1 option because, there are options with an exercise price
2 ranging from \$10 to \$700 on Tesla.

3 The timed expiration, of course, will affect the value of
4 an option. A long-term option is more valuable than a
5 short-term option because you have a longer period for the
6 stock price to change and give you a profit.

7 Tesla didn't pay any dividends, so that's not a
8 consideration.

9 And, interest rates can have a small effect. But interest
10 rates were only 2 percent, and didn't fluctuate over this
11 period, so that's really unimportant.

12 The major two factors are the stock price and volatility.

13 **Q** Is there a formula that is used to capture the effect of
14 all these six factors you have described in stock options?

15 **A** Yes. There's the Black-Scholes formula, which is a
16 function, a formula you can type into a computer or calculator,
17 and it gives you the option value of a call or put based on
18 these inputs. Based on the stock price, the volatility, and,
19 of course, the exercise price and the timed expiration. And,
20 you know, interest rates.

21 **Q** And is the Black-Scholes-Merton model widely used?

22 **A** Yes, it's very widely used. Mark Rubenstein, a textbook
23 author, wrote that it's perhaps the most widely-used formula
24 with a probability component in human history. It won the
25 Nobel Prize for Scholes and Merton. Fischer Black had passed

1 away.

2 It is cited over 40,000 times on Google Scholar. That
3 means that 40,000 professors wrote papers -- or in my case, ten
4 of the papers -- that cited the Black-Scholes as an inspiration
5 and reference.

6 It's used in industry all the time. In fact, it's used so
7 commonly in industry that instead of quoting option prices,
8 traders often say: Oh, that option is trading at a 50 percent
9 VOL (Phonetic). Meaning that it's become a shorthand for
10 quoting the prices.

11 It's also used by corporations, including Tesla, to
12 disclose the value of their employees' stock options. So it's
13 just ubiquitous.

14 **Q** Now, you mentioned volatility. How is volatility measured
15 for a stock option?

16 **A** Well, volatility is measured in percent, per year. And we
17 can measure historical volatility by just measuring the average
18 fluctuation in the stock return.

19 But, of course, options are investing for the future, not
20 the past. And option investors care about the future
21 volatility or the future fluctuations because those determine
22 the amount of likely profit from their investments.

23 So, what you can do is take the Black-Scholes formula, and
24 you can take your judgment of the volatility you anticipate in
25 the future and put that in the formula, and the formula will

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1 give you the value of a call option.

2 Now, of course, call options with different strike prices
3 or different expirations will have different values, and the
4 formula adjusts that.

5 But more commonly, one takes an option price and the
6 market price observed, and says: Hm, what volatility do I need
7 in the formula to get that number? Because you observe the
8 stock price, that's pretty easy. But the volatility has to be
9 your estimate or opinion about the future fluctuation in the
10 stock.

11 So you try a volatility of, say, 45 percent. And you
12 compare the resulting value on the market price. And perhaps
13 the value's a little lower than market price. So you raise the
14 volatility to 50 percent until you fit the option price
15 exactly. In other words, you invert the option price to see
16 what volatility matches it. And that's called "implied
17 volatility," because that's the volatility that the market is
18 using or the buyers and sellers of options are paying, that --
19 which reflects their view of what the volatility will be in the
20 future.

21 **Q** Now, if you can turn to the opinions in the case about
22 Tesla stock options.

23 Your first opinion you stated concerned the movement in
24 Tesla or pattern in Tesla stock option prices after 12:48 p.m.
25 on August 7th. Is that correct?

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1 **A** Yes.

2 **Q** Okay.

3 **THE COURT:** You should clarify, Counsel. 12:48, which
4 time?

5 **MR. PORRITT:** Oh, p.m. Eastern. I'm sorry.

6 **THE COURT:** Eastern time.

7 **BY MR. PORRITT**

8 **Q** Eastern time. Correct?

9 **A** Yes.

10 **Q** Okay. And could you explain the basis for that opinion?

11 **A** Yes. Well, as I've explained, options are sensitive to
12 the stock and to volatility. And I wanted to get an
13 option-specific measure that is sensitive to volatility. So I
14 created a straddle. So in practice, options are often bought
15 in many complex combinations, but a straddle is just buying a
16 call and a put. That is, the right to buy the stock and sell
17 the stock at a common exercise price. That's nothing more than
18 two options.

19 And a straddle is very useful because it -- an
20 at-the-money straddle, one with the value of the exercise price
21 is equal to the stock price, that is very insensitive to stock
22 price fluctuations because it makes an equal symmetric profit,
23 whether the stock price goes up or down. And it's very
24 sensitive to volatility. Because if there are large movements,
25 then -- large fluctuations, that will result in large profits

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1 for either the call or the put.

2 Also, if you look at where options are traded, most
3 options are traded with exercise prices close to the current
4 stock price, because investors are interested in making a
5 profit when the stock moves up and down compared to where it is
6 now, not -- for the most part, not extreme values like \$10 or
7 700 when the stock is in the 300s. In fact, 85 percent of
8 options trade within 20 percent of the money, meaning that the
9 exercise price is within 20 percent of the stock price.

10 So what I've done is I've taken a put and a call, or a
11 straddle, where the exercise price is right at the current
12 stock price. And so I've gotten a very average type of option
13 that is reflective of most of the options, 85 percent or so,
14 that are actually traded. And I took this as a percentage of
15 the stock price, and graphed it.

16 **Q** Okay. Now, that 85 percent statistic you just cited of
17 trading within 20 percent of the at-the-money, was that also
18 true for Tesla stock options during the class period?

19 **A** Yes. I computed that with Tesla stock options.

20 **MR. PORRITT:** So at this point if I could show Slide 4
21 as a demonstrative.

22 **THE COURT:** Okay.

23 (Document displayed)

24 **BY MR. PORRITT**

25 **Q** And this is the chart you just described?

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1 **A** Yes.

2 **Q** For Tesla stock options?

3 **A** Yes.

4 **Q** Can you just explain what is shown on this chart.

5 **A** Yes. These are straddle prices, as a percentage of the
6 stock price. And there are 17 different expirations available.

7 The long-term options expire, there at the top, on
8 January 17th, 2020, which is almost a year and a half from this
9 period. And the shortest options had only three days to go.
10 Starting on August 7th, the short-term options expired three
11 days later. So they were worth much less. These long-term
12 option on top, short-term options on the bottom.

13 And you can see on August 6th, the previous day, these
14 straddles barely moved.

15 Let me emphasize that the stock price absolutely moved
16 during the day on August 6th, because stock prices move almost
17 all the time. But the straddles are very insensitive to stock
18 price movements, so they were largely unaffected all throughout
19 the day on August 6th. And the same pattern continued on
20 August 7th.

21 Of course, the long-term straddles are worth more than the
22 short-term, but the lines are flat in the morning of August
23 7th. And then suddenly, shortly after that dashed vertical
24 line at 12:48 on August 7th, the long-term options started to
25 drop in price. So something happened to make long-term option

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1 investors anticipate lower volatility in the long run.

2 **Q** And is there academic literature regarding the effect of
3 announcements of mergers and buyouts on stock option price?

4 **A** Yes, there are a few papers or studies that examine what
5 happens to prices when there's a merger, takeover or tender
6 offer to buy the shares out.

7 And generally what happens is the stock price rises, which
8 of course makes sense. Because if someone offers to buy the
9 stock at a higher price, the stock will go up today. But the
10 implied volatilities drop.

11 And there's a simple formula to convert these straddle
12 prices into implied volatilities. But basically they measure
13 the same sort of thing. A high straddle price corresponds to a
14 high volatility, and a lower price corresponds to a lower
15 volatility. And this is what happens in the literature that
16 surveys mergers and buyout offers.

17 **Q** Okay. And did you also look at the -- continue this
18 analysis through the rest of the class period to August 17th?

19 **A** Yes. I extended it until the end of the class period on
20 August 17th. There's an exhibit.

21 **MR. PORRITT:** If I can show the witness Slide 2 as a
22 demonstrative, and publish?

23 **THE COURT:** All right.

24 (Document displayed)

25 **THE WITNESS:** Yes. So this is just a longer period

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1 corresponding to the previous graph. You can see the first
2 day, August 6th, the options were -- the straddles were flat.
3 They basically didn't move. They were fairly flat on the
4 morning of August 7th, and then suddenly dropped. At least,
5 the long-term options dropped.

6 And what's highly unusual, like, just did not happen on
7 the previous 100 days is a large fluctuation in long-term
8 options, particularly a fluctuation that was not accompanied by
9 movements in short-term options. If you look at the bottom
10 lines there, they didn't drop. If anything, they actually
11 increased a little bit. And that's what's so unusual about
12 these movements, that long-term and short-term options display
13 different behavior.

14 Ordinarily, if volatility rises, fluctuation rise, that's
15 good for all options because they all have limited loss and the
16 chance to make more money.

17 In any case, after this unusual movement on August 7th,
18 long-term options reversed the losses and recovered somewhat on
19 August 8 and 9. The graph -- graphs on August 8th and 9th go
20 back up a little bit. Then they flatten out. Looks like
21 nothing much happened on August 10, 13, 14, 15th, 16th.

22 Finally on the last day, on August 17th, in the morning,
23 the long-term options rose back again a little bit. And then
24 by the end of August 17th, those straddle prices ended up
25 roughly where they were at the very beginning, on August 6th or

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1 the morning of August 7th.

2 **BY MR. PORRITT**

3 **Q** Now, it looks like the top line which is the longest-term
4 option seems to move the most.

5 **A** Yes.

6 **Q** Why is that?

7 **A** Well, I don't have an opinion for why stock prices are
8 what they are, or why volatility is what it is. But it appears
9 that at 12:48 on August 7th, investors changed their opinions
10 and decided that the long-term volatility or fluctuations in
11 Tesla's stock would be smaller than before.

12 So on August 7th, market rather abruptly decided that
13 long-term volatility would be lower, and of course long-term
14 options, say year-and-a-half options are more sensitive and
15 they cost more money, and they're more sensitive to long-term
16 volatility than intermediate options with only one year or six
17 months left to go.

18 **Q** And in your opinion, were these changes in Tesla stock
19 option prices, as shown on this demonstrative, were they caused
20 by market forces?

21 **A** I don't think market forces is a good description
22 because -- of course, market forces may affect the stock price.
23 But we can see, for example on August 6th or in the middle of
24 the graph, that these options didn't really move very much.

25 And in particular, the short-term options didn't move, or

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1 they didn't lose money.

2 Now, if there were market forces that increase the prices
3 of all options or decrease the prices of all options, you'd see
4 all the options moved together when the volatility rises, or
5 all the options fall. But in this case, the short-term options
6 are largely unaffected, or perhaps positively affected, but
7 only the long-term options lost.

8 And that means that something distinctive happened to make
9 investors anticipate lower volatility in the long run, but not
10 sort of short-run market conditions that would affect all
11 options.

12 **Q** Now, did you look at some examples of particular puts and
13 call options during this time period?

14 **A** Yes. I prepared exhibits just to show you what happened,
15 as examples, to some prices.

16 **Q** All right.

17 **MR. PORRITT:** If I could show the witness Slide 5 as a
18 demonstrative, publish, please.

19 **THE COURT:** All right.

20 (Document displayed)

21 **THE WITNESS:** Yeah. So this is just putting some
22 numbers to the graphs.

23 The top line shows Tesla stock at 12:47, about a minute
24 before the options moved on August 7th. The stock price was
25 \$356.94. And by the close of trading, at 4:00, in the

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1 afternoon, the stock price had appreciated to \$379 and change.
2 So that means the stock rose by over \$22.

3 Now, I've selected a one-month and a longer put option.
4 This would be option to sell the stock for \$420. Now,
5 remember, this is on January -- I'm sorry, August 7th. And so
6 the first option, the Tesla put option is one that expires on
7 September 7th, one month later.

8 So in the middle of the day, at 12:47, this option cost
9 \$65.55. People were buying and selling for about that price.
10 But by the close of trading, the price was only \$46.30. That
11 means that option lost \$19.

12 This makes sense, right. When the stock price goes up
13 closer to 420, the option to sell it for 420 becomes less
14 valuable. I mean, if the stock price reaches 420, then that
15 put option won't have any value because you can simply sell the
16 stock for free in the market for 420; you don't need to buy an
17 option for that purpose.

18 And the same pattern was evident with the longer-term put
19 option that expired in 2020. Had the same strike price. But
20 because it had a longer time to expiration, it was worth more.
21 It was worth over \$121, almost twice as much as the one-month
22 option.

23 And this option also lost value. It went down to around
24 \$81. So it lost \$40. So, longer-term options cost more, and
25 they gain or lose more money in response to the stock price.

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1 **Q** Did you prepare a similar demonstrative looking at call
2 options?

3 **A** Yes. I did this with call options, to show the unusual
4 behavior of long-term call options.

5 **MR. PORRITT:** If we can show Slide 6, please.

6 (Document displayed)

7 **THE WITNESS:** So the top row is the stock price. Just
8 remember that the stock price rose by \$22 on the afternoon of
9 August 7th.

10 A one-month call option with a 420 strike price, that was
11 worth \$2 in the middle of the day, right, at 12:47 before the
12 option prices moved. But by the end of the day, it was worth
13 3.93, which is a \$1.87 increase. Almost double.

14 And this makes sense, that this is an out-of-the-money
15 call option; it only profits when the stock goes above 420.
16 But as the stock price rose to get closer to 420, the stock --
17 this option gained value because there was increased chance
18 that the stock would go above 420 within the month. So that's
19 -- that's common, usual, understandable.

20 But the strange thing is the long-term call option. This
21 is also an option to buy for \$420, but it expires in 2020
22 right? At 12:47 it traded for \$59.73. But then when the stock
23 price went up, instead of going up, this option fell by the
24 close of trading. It lost over \$22.

25 And that's strange. You have the right to buy stock,

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1 right, for a year and a half, and of course that long-term
2 option costs more than a short-term option. And then when the
3 stock goes up, that's the thing you have the right to buy.
4 That should be good. But this option declined in value. And
5 if the stock price went up, the other variable that would
6 affect the option is the volatility. So even though the stock
7 was worth more, the volatility, the amount of fluctuation that
8 this option anticipated was lower, so the chance of getting a
9 really large long-run gain appears to have been lower in the
10 estimation of people who were trading this option.

11 **BY MR. PORRITT**

12 **Q** And moving now to your final opinion, which is that you
13 could measure the impact on option prices using financial tools
14 available to you.

15 What's your opinion on that matter?

16 **A** Yes. So, I can use the tools of option theory,
17 specifically the Black-Scholes formula, to measure the impact
18 of information on option prices.

19 **Q** All right. And how could you do that?

20 **A** Well, I have to compare the value of an option under one
21 informational situation to the value under another. So we can
22 see these option prices in the market. We can see what the
23 market thought they were worth under prevailing conditions.

24 But the question I address is: What would the option
25 values have been under a different situation? Now, I have no

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1 opinion on what the stock price or volatility should be. But
2 if you tell me that if different information were available or
3 less information was available, and you tell me what the stock
4 price would have been and what the volatility would have been,
5 I can tell you what the effect would have been on options. I
6 simply take the Black-Scholes formula, and I have to take the
7 exercise price and the expiration. So the effect would be
8 different on different options.

9 But if you tell me the stock price would have been
10 different, than I can tell you how different the option price
11 would have been. Or if you tell me that the volatility would
12 or should have been different, I can tell you, based on the
13 Black-Scholes formula, how much each option would have moved.

14 And then I can take the difference between the
15 Black-Scholes price and the actual price that the market was
16 traded to measure the impact of different information on the
17 options.

18 **Q** This Black-Scholes price you are referring to, would that
19 also be referred to as a but-for price?

20 **A** Yes, a but-for. It's a counterfactual hypothetical value,
21 if the information were different, and that information
22 produced a different stock price and different volatility. Or
23 a -- but for, you know, the information, the stock price
24 involved would have been different. I can tell you the but-for
25 call price or put price, using the Black-Scholes formula.

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1 Q And why do you select the Black-Scholes model, or why
2 would you select the Black-Scholes-Merton model to calculate a
3 but-for option price?

4 A Well, it's by far the most widely accepted and common
5 option model. And it's also robust. Meaning it's simple.
6 There are only two important factors. The stock price and
7 volatility.

8 Now, there are other more complex models, and I've
9 published many of them. But simplicity is a virtue, because
10 the stock price is good for calls and bad for puts. That's
11 simple. And volatility, the second factor, is good for all
12 options.

13 So it's easy to understand why the model produces certain
14 outputs. If volatility rises, all option prices go up. If
15 volatility falls, all option prices go down. And so there is
16 not a lot of error in determining these two inputs, because we
17 can measure them accurately.

18 So it works well or it -- it worked reasonably, and it's
19 sort of transparent to use and understandable. And for that
20 reason, it's by far the most popular model on Wall Street.
21 Again, it's used by investment managers, it's used by option
22 traders. I teach it both in my option course and in my
23 international finance course, to value currency options. And
24 it's also used by corporations, including Tesla, in its
25 financial statements to value employee stock options. So it's

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1 used all over the place. It's the standard tool for option
2 valuation.

3 **Q** And have you determined any but-for implied volatilities
4 for Tesla stock in this case?

5 **A** No. But-for volatilities or but-for stock prices I have
6 no opinion on what those should be. My expertise is limited to
7 determining the impact of stock price or volatility on options.
8 So if you give me a but-for stock price and a but-for
9 volatility, then I can compute the but-for option price using
10 the formula. But I don't determine -- the jury will determine
11 the but-for stock price and but-for volatility for the
12 different option expirations.

13 **Q** But have you calculated implied volatilities that applied
14 to Tesla stock options during the class period?

15 **A** Yes. I've prepared an exhibit to illustrate the different
16 volatilities, implied volatilities that were there for options.

17 **Q** All right.

18 **MR. PORRITT:** If I could show the witness Exhibit --
19 Slide 7?

20 **THE COURT:** All right.

21 (Document displayed)

22 **THE WITNESS:** Yes. So this is a big chart because
23 I've done it for every day for all 17 types of options. That
24 is, all 17 option expirations. I have computed straddle
25 prices, just the put plus the call.

1 And there's a simple way to convert those into volatility.
2 There's a formula that basically inverts those prices to give
3 you the implied volatilities from the Black-Scholes formula.
4 So I've done this for the shortest options which had only three
5 days to expiration, all the way down to the longest options at
6 the bottom.

7 It would be useful to highlight that bottom row.

8 (Document highlighted)

9 **THE WITNESS:** Those 2020 options. That would have
10 been the top line in the graph, the most valuable or longest
11 option.

12 And I'm showing you the implied volatility, because they
13 are in percent per year. So that makes all these numbers
14 comparable. They range from 40 to 50 percent across all days
15 and -- actually, they went into the thirties.

16 But you can see on August 6th and the morning of August
17 7th, the implied volatility of the straddle was about
18 50 percent. So at the bottom there, 50.91, and on the morning
19 of August 7, 50.52 percent. That's per year. So that's above
20 average.

21 The stock market, itself, if you look at index options,
22 might have a volatility of 15 or 20 percent on a typical day.
23 Other stocks, the average stock would have a volatility of 30
24 to 40 percent. But Tesla stock has more fluctuations than
25 average, so it had 50 percent implied volatility.

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1 But then suddenly, the volatility, by the close of
2 August 7th, dropped to only 32.57 percent on the bottom. So on
3 the bottom there, it dropped from 50 percent to 32 percent. We
4 saw that on the graph.

5 The volatility recovered. It rose back to 37 and
6 42 percent on the next two days.

7 And finally, on the far right, if you look on August 17th,
8 by the close, it was at 48.65, is. It was back to where it
9 started on the left of this chart.

10 So I've done this not just for the longest-term options,
11 but I've done it for options of all expiration. And so these
12 are the actual prevailing end-of-day volatilities based on
13 at-the-money straddle prices, these are representative of what
14 the option markets are using to value options. But the but-for
15 numbers, that would be your opinion of what the volatility
16 would have been under some other situation.

17 **Q** Does the Black-Scholes model have an assumption for
18 implied volatilities across maturities?

19 **A** I would call it a conclusion. Black-Scholes, like any
20 model, is an idealization. And it is a simple model, because
21 it gives you one volatility number for options of all strike
22 prices.

23 It's possible that the volatility is different over
24 different time horizons. In fact, we saw that. We saw that
25 the long-term volatility dropped, whereas the short-term

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1 volatility did not. But given the volatility, say, 50 percent,
2 that applies to options, all strike prices within the
3 Black-Scholes model.

4 **Q** And is that assumption well-known and accepted?

5 **A** Yes, that is the Black-Scholes model. And of course, no
6 model will perfectly match all option prices, but the
7 Black-Scholes model uses one volatility number for all options
8 across all strike prices.

9 **MR. PORRITT:** Thank you, Professor Heston. Defense
10 will have questions for you now.

11 **THE COURT:** All right. Let me just remind the jury
12 that we've seen some charts and things that are -- we call
13 "demonstratives." They are shown to you so that you can
14 understand the testimony. But charts and summaries are only as
15 good as the testimony and other admitted evidence that supports
16 them. And so you should give it whatever weight you think is
17 appropriate.

18 All right. Cross.

19 **MR. ROSSMAN:** Thank you, Your Honor.

CROSS-EXAMINATION

21 **BY MR. ROSSMAN**

22 **Q** Andrew Rossman for defendants. Good morning, Professor
23 Heston.

24 **A** Good morning.

25 **Q** It's nice to see you. You're plaintiff's options expert,

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1 true?

2 **A** Yes, I am.

3 **Q** And that's your expertise. Option pricing is part of your
4 expertise. True?

5 **A** Yes.

6 **Q** You're not offering any opinion to this jury as to what,
7 if any, damages plaintiffs incurred. True?

8 **A** That's true. My opinion measures the impact of
9 information --

10 **Q** If you could answer my question, yes or no.

11 **THE COURT:** You can answer.

12 But I'll let him explain briefly.

13 So go ahead and answer it, and you can explain.

14 **THE WITNESS:** Yes. I measure the impact of
15 information which would change option prices. But I don't
16 determine the inputs or interpretation of those numbers.

17 **BY MR. ROSSMAN**

18 **Q** Well, I'm right, sir; you're not here telling the jury
19 what the damage numbers should be for any Tesla option in the
20 case at all. True?

21 **A** That's true.

22 **Q** And you're an academic, but you're paid by the hour for
23 your opinions in this case?

24 **A** Yes, I am.

25 **Q** Am I right that as of January of this year, you were paid

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1 approximately 300- or \$350,000 for that work?

2 **A** Um, I haven't tabulated it, but it's a few hundred hours
3 of work, that would be in that range.

4 **Q** In the range of 300-, \$350,000?

5 **A** Yes, probably.

6 **Q** Okay. Which is actually more than your annual salary, is
7 that right?

8 **A** Yes.

9 **Q** Okay. Now, in this case, there are 2,400 unique Tesla
10 options that trade as securities. Correct?

11 **A** Yes. I think it's 2,443. Over 2,000.

12 **Q** Okay. And any class member, as you understand it, could
13 have bought or sold options. Right? Could have bought or sold
14 puts or calls at a variety of different maturities, and a
15 variety of different strike prices. Right?

16 **A** Well, yes. Anyone who's authorized to trade options who
17 has a brokerage account can buy or sell any of these options.

18 **Q** Am I right, sir, for any class member who potentially lost
19 money by buying a Tesla option, there's someone else who gained
20 money by selling that option, or vice-versa?

21 **A** Yes. Every time there's a buyer, there's a seller.

22 **Q** Okay. And option prices change by the minute, right?

23 **A** Option prices can change very rapidly, as illustrated by
24 my charts.

25 **Q** Okay. And there are many reasons for these changes.

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1 Changes in liquidity, market news, industry news. Right?

2 **A** Well, not really. Because market news and industry news
3 affect the stock price. And my sheet shows how the options
4 respond to the stock price. So that information is
5 incorporated into the stock price. It affects the options
6 indirectly. But options care about the stock that they can buy
7 or sell, and the price of that stock.

8 So to the extent that information affects markets, it goes
9 through the stock or through the volatility.

10 **Q** Do you disagree that options can change for many reasons
11 having nothing to do with company-specific events?

12 **A** Well, when you say "reasons" --

13 **Q** You understand my question?

14 **A** They generally change directly in response to the stock
15 price. The stock price might respond to information, so that's
16 what I call an indirect reason.

17 **Q** Okay. And what you are -- you and plaintiffs are
18 proposing here is a single method that would try to price 2,400
19 different options. Right?

20 **A** Yes.

21 **Q** Okay.

22 (Reporter clarification)

23 **MR. ROSSMAN:** Apologies. It was a little bit loud in
24 the microphone. My bad. I'll try not to cough.

25

1 BY MR. ROSSMAN

2 Q Now, it's true, sir, is it not, that according to you,
3 Mr. Musk's tweets had different impacts on different options.
4 Right?

5 A I have no opinion about Musk's tweets. I've merely
6 illustrated that at 12:48 on August 7th there was an abrupt
7 change in option values.

8 Q Let's talk about that for a second. So what you describe
9 as an abrupt, or I think unprecedented change, you're saying
10 from Tesla's perspective. Right? You've not seen that before,
11 with respect to Tesla options. True?

12 A Yes. I looked at the movements in Tesla options, over
13 previous 100 days, and never saw any -- any situation where the
14 long-term options moved abruptly and short-term options did
15 not.

16 Q But that very phenomenon that you describe is typical
17 whenever there's a merger or buyout announcement. Right?

18 A Yes. So it is -- it is typical in these studies that when
19 there's information announced or released about a buyout offer,
20 that it affects the options and the stock.

21 Q Okay. So, if Mr. Musk had, for example, truthfully
22 tweeted out "Am considering taking Tesla private at \$420," and
23 that's it, okay, you might expect same exact movement in option
24 prices. Right?

25 A Yes. If the market believed the information, it would

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1 have that effect.

2 Q Now, the -- give me one moment. Just trying to see if I
3 can skip some questions and save you some time, Professor.

4 Okay?

5 A Thank you.

6 Q Now, you actually did two methodologies here. Calculated
7 two different methodologies for plaintiffs. Right?

8 A Yes, I submitted a report --

9 Q Okay.

10 A -- explaining that there are two ways one can calculate
11 the impact of information.

12 Q Okay. And the first one, I'll use your terminology, was
13 something called an "impact quantum methodology"? Is that
14 right?

15 A Yes.

16 Q Okay. And it was your opinion that the first model that
17 you had, the first methodology, was the most reasonable and
18 robust one to use. Right?

19 A Well, in numbers, I think the -- the first sentence was
20 that one can take the -- the actual Tesla options and compare
21 them to the Black-Scholes value, which is what I've done here.

22 Then I elaborated on the impact quantum method, where one
23 can calculate Black-Scholes formulas when an option was
24 purchased, for example. And the Black-Scholes formula, um,
25 under a but-for scenario, and take the difference.

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1 So I -- I don't know which one you want to call number
2 one. But they're both reasonable.

3 **Q** Right. My question to you is the first one, your impact
4 quantum methodology, you described as, using your words: My
5 model is the most reasonable and robust one to use.

6 That's how you described it. Right?

7 **A** Um, I would have to check, but --

8 (Document handed up to the Court)

9 **Q** Well, I can give you your deposition transcript to see if
10 that aids your memory, sir.

11 **A** Um, I --

12 (Document tendered to the Witness)

13 **Q** You're being handed, among other things, a copy of your
14 deposition transcript.

15 **A** What page are you referring to?

16 **Q** Page 184. And the question starts at Line 5, continues
17 through 22.

18 (Document displayed)

19 **MR. ROSSMAN:** And we don't need to read the whole
20 thing, Your Honor. To save time, I'm just referring him to his
21 testimony at Line 17.

22 **BY MR. ROSSMAN**

23 **Q** That's what you told me under oath in your deposition. Is
24 this true, sir?

25 **A** Yes. Of course, the Black-Scholes model is not mine.

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1 It's Black, Scholes and Merton's model.

2 And in all my applications I use the formula, the question
3 is: When you implement it, do you compare the but-for price to
4 a theoretical Black-Scholes formula at the time the option was
5 traded? Or do you compare it to the actual transaction price?

6 And it's my understanding that counsel on both sides
7 agreed to use the actual transaction price, which was part of
8 my original opinion that that was a reasonable method.

9 **Q** Okay. Now, sir, let's start by answering my question, if
10 you would. That's the truthful testimony you gave me in your
11 deposition (Indicating). That the prior model you use is the
12 most reasonable and robust one to use. True or false?

13 **A** When you say "model," the model -- it's perhaps hubris to
14 call it "my model" -- is simply the Black-Scholes model. And
15 you're referring to a detail of implementation. But both of
16 these are the Black-Scholes model, or my model. They're just
17 different ways of implementing it, so --

18 **Q** Can I get an answer to my question?

19 **THE COURT:** Yeah. There is a straight question
20 whether you agree that you had so testified that the first
21 methodology, using Black-Scholes for both but-for and the --
22 the price was the -- what are the words, "the most reasonable"?
23 Is that -- is that --

24 **THE WITNESS:** Well, when I said "my model" --

25 **THE COURT:** I'll let you explain that.

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1 **THE WITNESS:** Yes, I did.

2 **THE COURT:** Did you say that?

3 **THE WITNESS:** Yes, I said that.

4 **THE COURT:** Okay, so he said that. I'll give him a
5 chance to explain.

6 Now, can you explain? You've confirmed that you did say
7 those words.

8 **THE WITNESS:** Yes, I said --

9 **THE COURT:** If you want to say something about why you
10 said that, you can say that.

11 **MR. ROSSMAN:** Okay.

12 **BY MR. ROSSMAN**

13 **Q** Now, you had an original model where you created a
14 theoretical price as your starting point, right? And then,
15 that's your impact quantum methodology --

16 **A** I would call it a methodology of applying the model.

17 **Q** Perfect. I'll adopt your language --

18 **A** Yes --

19 (Multiple speakers)

20 (Reporter clarification)

21 **BY MR. ROSSMAN**

22 **Q** So I'll adopt your language, your original methodology.

23 **A** Yes.

24 **Q** Got me? Okay. And, and the reason why you switched your
25 original methodology is it was being challenged as unreliable.

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1 Right?

2 **MR. PORRITT:** Objection, Your Honor. That misstates
3 the record, as counsel knows.

4 **THE COURT:** Overruled.

5 **THE WITNESS:** I -- um, I had noted in my original
6 report that there were two different methods of implementing
7 the Black-Scholes formula. You can compare the but-for prices
8 either to Black-Scholes prices or to the actual transaction
9 prices. And it was my understanding that counsel had agreed to
10 use the actual transaction prices. That was also reasonable,
11 and, and the Judge asked for a report implementing that
12 methodology.

13 **BY MR. ROSSMAN**

14 **Q** Now, in your original report, you didn't use the actual
15 transaction prices, true?

16 **A** That is true.

17 **Q** Okay, because you preferred your original methodology.
18 True? You selected -- let me rephrase the question.

19 In fact, you selected your original methodology rather
20 than use actual transaction prices. Correct?

21 **A** Um, they're both reasonable. I mean --

22 **Q** That's not my question, sir. My question is: You
23 selected your original methodology, rather than use transaction
24 prices; isn't that correct?

25 **A** That's correct.

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1 **Q** Okay. And then when it was challenged -- and I -- I
2 understand you read the Court's order on this?

3 **A** I -- I did skim some court documents.

4 **Q** You challenge it, and you learn that there were
5 substantial questions regarding --

6 **MR. PORRITT:** Objection, Your Honor. Now he's --

7 **THE COURT:** Sustained, sustained.

8 **MR. ROSSMAN:** I can move on, Your Honor. Okay.

9 **BY MR. ROSSMAN**

10 **Q** When you understood it was challenged, you moved to a
11 second methodology, which now used actual prices. True?

12 **MR. PORRITT:** Again, objection. That is misstating
13 prior court orders, Your Honor.

14 **THE COURT:** Overruled.

15 You can answer that question.

16 **THE WITNESS:** Judge Chen issued an order asking --

17 **MR. ROSSMAN:** Your Honor, if I can ask the question,
18 the witness shouldn't be able to characterize it.

19 **THE COURT:** You should answer the question, and then
20 I'll allow you a chance to explain.

21 So reask the question.

22 **MR. ROSSMAN:** Sure, sure, sure. Okay.

23 **BY MR. ROSSMAN**

24 **Q** Let's try to make it as simple as we can.

25 You had an original methodology, and now you have what you

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1 presented to the jury today, a second methodology. True?

2 **A** Yes.

3 **Q** Okay. Your second methodology uses actual transaction
4 prices. True?

5 **A** Yes. Yes.

6 **Q** Okay. You did not do a comparison of the original
7 methodology to the second methodology. Correct?

8 **A** No, I did not compare them.

9 **Q** Okay. So as you sit here, except for one example and we
10 have a chance to take a quick look at, you're not aware of the
11 differences between your original methodology and your second
12 methodology, in terms of option prices, are you, sir?

13 **A** I have not done a detailed comparison, if that's what you
14 mean.

15 **Q** Okay. You are aware, as you sit here, that the two
16 methodologies yield different numbers in terms of what the
17 option prices should be. Right?

18 **A** Well, it depends what inputs you used for them, yes.

19 **Q** Are you aware that the two methodologies yield different
20 numbers for every single option in the case?

21 **MR. PORRITT:** Objection. Lacks foundation.

22 **BY MR. ROSSMAN**

23 **Q** Are you aware of that?

24 **THE COURT:** Overruled.

25 **THE WITNESS:** Again, it depends what inputs you use.

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1 If you use different inputs, you get different outputs. So to
2 the extent the two methods are different, or to the extent they
3 use different inputs, they will produce different outputs, yes.

4 **MR. ROSSMAN:** Okay. Now, could we have -- I want to
5 take a look real quick at two things.

6 Could we have -- I want to show Table 5 from your opening
7 report, one of the slides that we prepared just to make it a
8 little easier to read.

9 (Document displayed)

10 **THE WITNESS:** Yes.

11 (Off-the-Record discussion)

12 **MR. ROSSMAN:** We're good, we're good. Thank you.
13 Just getting a little technical advice.

14 **BY MR. ROSSMAN**

15 **Q** This is a copy of Table 5 from your opening report.
16 Right?

17 **A** Yes, it is.

18 **Q** And if we could look at the BSM call price, okay, you're
19 showing the price using -- BSM is the Black-Scholes-Merton
20 model, true?

21 **A** Yes.

22 **Q** You are showing calculation of price using that model for
23 a particular call option. January, 2020. Right?

24 **A** Yes.

25 **Q** Okay. With a strike of \$400. And, and if you look all

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1 the way to the right, you come up with an impact of \$11.91,
2 right?

3 **A** Yes. That's right.

4 **Q** I want to see if I can state this in clearer terms. The
5 re-valued column is what your starting price was. 59.89,
6 right?

7 **A** Yes.

8 **Q** And the but-for price, 47.98, is what you claim the price
9 should have been, absent the tweets. Right?

10 **MR. PORRITT:** Objection, Your Honor. I don't think
11 that states at all what it is.

12 **THE WITNESS:** Well, I think that's an illustration --

13 **THE COURT:** Hold on.

14 **MR. ROSSMAN:** I can ask the Professor.

15 **THE COURT:** Why don't you rephrase the question.

16 **MR. ROSSMAN:** I'll alleviate the objection.

17 **BY MR. ROSSMAN**

18 **Q** What is 47.98?

19 **A** That says under -- I have no opinion about the but-for
20 assumptions. But it says if one were to assume \$305.50 Tesla
21 stock price, and if one were to use an implied volatility of
22 50.52 percent, then the Black-Scholes model would give you that
23 47.98, and predict the \$11.91 price impact.

24 **Q** So it's stated in terms that regular folks might
25 understand, okay, this slide indicates that someone who bought

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1 that call option on that day overpaid by \$11.91, correct?

2 **A** Yes, relative to those but for assumptions.

3 **Q** Now can we look at Table 5 in your supplemental report.

4 (Document displayed)

5 **Q** Same table, using your second methodology. Okay? And
6 could you tell us what the -- the same call option that we were
7 looking at a moment ago. Right? And here, you see an actual
8 transaction price of \$45. Right?

9 **A** Yes.

10 **Q** That's what someone actually paid. And the but-for price
11 is 47.98. Right?

12 **A** Yes.

13 **Q** And if I understand, your revised methodology concludes
14 that the person who bought this same exact call option, okay,
15 actually underpaid by \$2.98. Right?

16 **A** Yes.

17 **Q** Okay. So under one methodology, plaintiff lost money as a
18 result of the tweets that are challenged in this case, and
19 under the new methodology the plaintiff gained money?

20 **MR. PORRITT:** Objection. Again, misstates the two
21 exhibits.

22 **THE COURT:** Overruled.

23 **THE WITNESS:** Well, I want to indicate it's not merely
24 the methodology, but the inputs are different. I can explain
25 if you'd like.

HESTON - CROSS / ROSSMAN

1 BY MR. ROSSMAN

2 Q Well, let me ask you this question, Professor. You can't
3 tell the jury which of those two numbers are the right number.
4 Right?

5 MR. PORRITT: Objection, Your Honor.

6 THE COURT: Overruled.

7 THE WITNESS: I have no opinion about the but-for
8 assumptions. But, I mean, these are two different
9 illustrations which make different assumptions with different
10 inputs. So although there are two different methodologies, you
11 have to -- they're making different assumptions about the
12 inputs to the -- to the methodology.

13 Of course, you can make different assumptions, you have
14 different conclusions. So these examples are not comparable.
15 And I can elaborate.

16 BY MR. ROSSMAN

17 Q You don't take any ownership of the inputs in your models
18 at all, do you, sir?

19 MR. PORRITT: Objection, Your Honor, that's
20 argumentative.

21 MR. ROSSMAN: Let me rephrase, the question. Okay?

22 BY MR. ROSSMAN

23 Q You're not telling the jury what the right inputs should
24 be to your methodology, are you, sir?

25 A I -- I don't determine the but-for price, because that's

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1 unobserved. But if you are talking about the, um, the input,
2 the transaction price -- for example, you've highlighted this
3 \$45 transaction price. And, I looked, in the morning. The
4 stock actually opened at \$40, right, three or four minutes
5 earlier. This was the morning of August 8th, so markets were
6 extremely turbulent, opening after the movements on August 7th.

7 So the price jumped from 40 to 45. And in fact, well
8 within the first hour of trading, the stock rose to 53. So the
9 stock was moving a lot.

10 So if you have a particular customer who is impacted, you
11 could look at the price that they paid, which would be very
12 sensitive to exactly when they bought or sold the option.

13 **Q** My question to you, sir, is simply: You're not telling
14 the jury what the input should be to determine the but-for
15 price of Tesla options. Right?

16 **A** No. I'm telling them they can use the actual transaction
17 price for one of these -- in this case it's \$45 at one point in
18 time. And, and then the but-for price would be determined by
19 the jury.

20 **Q** Okay. So if I understand, the actual transaction price is
21 whatever somebody actually paid.

22 **A** Yes.

23 **Q** We're not having a debate about that. Okay? And the
24 but-for price is based on your methodology, what the price
25 would be in a theoretical world if things were different.

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1 Right?

2 **A** Yes.

3 **Q** Okay. But you're not telling the jury what they should
4 do, in order to come to that but-for price.

5 **A** No. The jury will have to decide what the stock price
6 would have been on -- in a different scenario, and what the
7 volatility would have been. I'm just allowing them to compare
8 it to the actual price that was traded.

9 **Q** Now, Professor Heston, would you agree with me that before
10 Mr. Musk tweeted anything out at all, so before 12:48 p.m.
11 Eastern time on August 7, 2018, before he tweeted out anything
12 at all, he couldn't have caused any damage to anyone who bought
13 or sold Tesla options.

14 **A** Um, well, I think it's clear, I haven't been asked to
15 opine about things outside the class period. But I think it's
16 clear that one would presume that the inflation or deflation of
17 option prices was zero outside the class period.

18 **Q** Okay. So if we use your model, and we run calculations
19 before the class period, and it comes up that there are --
20 those calculations showed damages before the class period,
21 that's a problem with your model. Right?

22 **A** Well, I don't think that would be an appropriate
23 application.

24 **Q** Okay. All right. We'll hold on. But, you agree with me
25 there should be zero damages before 12:48 on August 7th.

1 Right?

2 **A** Um, I think that's a legal question. I have measured the
3 impact of information or changes in stock price and volatility
4 on changes and option values. I don't have an opinion about
5 the class period or legal damages.

6 **Q** Okay. Now, just a couple specifics, and I think we're
7 almost done, Professor. Okay?

8 The Black-Scholes model, first of all, it wasn't merely
9 that you used the Black-Scholes model. Your methodology relied
10 on building something called a "straddle." Right?

11 **A** Yes. Adding a put and a call to measure the volatility.

12 **Q** At a particular price, at the money. Right?

13 **A** Yes.

14 **Q** And that's not an actual security that's traded in the
15 market. A straddle is a theoretical instrument where someone's
16 buying a put and a call at the same time, at the same price?

17 **A** Um, I think my answer is no. When you buy and sell
18 options, you can actually click in that you want to buy a
19 straddle, or other combinations, so you can buy them both at
20 the same time.

21 **Q** You can -- but you have to buy both, right? Have to buy
22 the put and the call.

23 **A** Yes. I think it's still one click or two clicks in the
24 same transaction.

25 **Q** Now, you agree, Professor, that the Black-Scholes model

HESTON - CROSS / ROSSMAN

1 has systematic biases and misprices options?

2 **A** Well, no model, including the Black-Scholes model, will
3 match all options perfectly.

4 **Q** You told the jury that you wrote 20 papers, 20 published
5 academic papers, half of them on options, right?

6 **A** Yes.

7 **Q** Okay. One of those papers, you wrote a critique of the
8 Black-Scholes model. Right?

9 **A** Most of my papers are critiques of the Black-Scholes
10 model.

11 **Q** Okay. And one of the things that you said in an academic
12 paper that you published critiquing the Black-Scholes model is
13 (As read):

14 "While the Black-Scholes model is widely
15 applied in the marketplace it has systematic
16 biases and misprices options."

17 You wrote that. Right, sir?

18 **A** If you look at that sentence in my paper --

19 **Q** Start by answering my question. Did you write that?

20 **THE COURT:** Answer the question first, and then I'll
21 allow you to explain.

22 **THE WITNESS:** It contains a footnote, indicating that
23 this -- it largely describes currency and index options, as
24 opposed to individual equity options.

25

HESTON - CROSS / ROSSMAN

1 **BY MR. ROSSMAN**

2 **Q** So the answer to my question: Yes, you did in a
3 peer-reviewed academic journal write these words, okay:

4 "The Black-Scholes model has systematic
5 biases and misprices options."

6 **A** In some applications, yes.

7 (Reporter clarification)

8 **THE COURT:** Could you repeat what you said?

9 **THE WITNESS:** Yes. In some applications, yes.

10 **BY MR. ROSSMAN**

11 **Q** You know that the Black-Scholes model, like all models,
12 has errors. Right?

13 **A** No model is perfect, yes. All models deviate from
14 reality, which is why they're models and not reality.

15 **Q** But you didn't calculate -- so you know there are errors,
16 but you didn't calculate an error rate. Right?

17 **A** No; that would depend on the application and the criterion
18 you have.

19 **Q** So we can know that the model's wrong. We just can't know
20 by how much, in this courtroom. Right?

21 **A** Well, how much would depend --

22 **MR. PORRITT:** Objection. Objection.

23 **THE COURT:** Hold on.

24 **MR. PORRITT:** Again, that's argumentative and vague
25 and ambiguous.

HESTON - REDIRECT / PORRITT

1 **THE COURT:** Sustained.

2 **MR. ROSSMAN:** I'll move on.

3 **BY MR. ROSSMAN**

4 **Q** You recall giving testimony in your direct examination
5 that options trading is not gambling?

6 **A** Yes.

7 **Q** Okay. In addition to publishing academic articles, you
8 have actually published books. Right?

9 **A** Yes.

10 **Q** You published books about poker under a pseudonym. Isn't
11 that true, sir?

12 **A** Yes, that's true.

13 **Q** So I guess options trading does have some connection to
14 gambling.

15 **MR. PORRITT:** Objection, Your Honor.

16 **THE WITNESS:** I don't understand. I mean --

17 **THE COURT:** Sustained.

18 **MR. ROSSMAN:** I have no further questions, Your Honor.

19 **THE COURT:** All right, thank you.

20 Redirect?

21 **REDIRECT EXAMINATION**

22 **BY MR. PORRITT**

23 **Q** Professor Heston, I'll be brief.

24 You had some questioning from defense counsel regarding
25 the shift between two models you proposed in your initial

HESTON - REDIRECT / PORRITT

1 report. Is that correct?

2 **A** Yes.

3 **Q** Okay. Is it your understanding that the shift was
4 proposed by defendant's counsel?

5 **MR. ROSSMAN:** Objection, Your Honor. That is not
6 true.

7 **THE COURT:** He can testify as to his understanding.

8 **THE WITNESS:** I -- I don't understand the legal
9 machinations. But in my original report, I mentioned that one
10 can -- must compute but-for prices, because we don't observe
11 what the stock price or volatility or option prices would have
12 been, absent some information. So one must compute those
13 values using some model -- and Black-Scholes being the
14 overwhelmingly widely accepted one -- and compare them. And
15 you can either compare them to a model price or to an actual
16 transaction price.

17 And it -- it was represented to me that the counsel on
18 both sides had agreed it would be more appropriate to compare
19 to the transaction price. And the Judge requested that I
20 illustrate that methodology which I always opined was
21 reasonable, and I have.

22 **Q** And there was some questioning regarding your use of
23 straddles. Do you recall that?

24 **A** There have been some questions about straddles, yes.

25 **Q** Are straddles a widely used technique for analyzing option

HESTON - REDIRECT / PORRITT

1 prices in academia and the industry?

2 **A** Yes, at-the-money straddles are, because at-the-money
3 straddles are right where the stock price is now. They make an
4 equal profit based on the current level of the stock price, and
5 they use real options, just a put plus a call price, that are
6 right in the middle of where all the options are traded.

7 Right? You have options -- 85 percent of the options are
8 traded within 20 percent of the current stock price. So they
9 resemble or in some cases are identical to the options I
10 measure to form a straddle.

11 And also I have both a put and a call, so it's just
12 like -- the at-the-money straddle is like the Goldilocks
13 option. The strike price isn't too high or too low; it's just
14 right. It's most sensitive to volatility, and very insensitive
15 to the stock price improvement.

16 So professors and Wall Street use at-the-money options to
17 measure volatility very commonly.

18 **Q** And if you use the Black-Scholes model to calculate or to
19 model option prices for any stock option at any period of time,
20 will you precisely match the actual transactions prices for all
21 strikes and all maturities?

22 **A** No. No model will perfectly fit any set of real data,
23 because the real world is not a laboratory we can completely
24 control. You have different people buying and selling at
25 different prices throughout the day.

HESTON - RECROSS / ROSSMAN

1 The model is a description of what happens. In
2 particular, the Black-Scholes model is the most
3 widely-accepted, simple and robust way of measuring that,
4 specifically based on the stock price and volatility.

5 **Q** But if you ran that, you would still see differences
6 between the actual transacted price and the Black-Scholes
7 model?

8 **A** Yes. All models will give you differences.

9 **MR. PORRITT:** Thank you.

10 Nothing further, Your Honor.

11 **THE COURT:** Thank you.

12 Cross?

13 **MR. ROSSMAN:** One question, Your Honor.

14 **RECROSS-EXAMINATION**

15 **BY MR. ROSSMAN**

16 **Q** Although widely accepted, Professor, you agree that the
17 Black-Scholes model is not taken as seriously in terms of
18 describing the level of prices, because you can often do much
19 better with changes than you can with a level.

20 You agree with that, don't you, Professor?

21 **A** Well, you take -- it's taken seriously -- I'm not sure
22 what that means.

23 **Q** These are your words.

24 **THE COURT:** Yeah, rephrase that.

25 **MR. ROSSMAN:** Okay.

1 **BY MR. ROSSMAN**

2 **Q** Well, you would agree that Black-Scholes -- the
3 Black-Scholes model is not -- it's well-documented that there
4 are problems with the level of pricing in the Black-Scholes
5 model.

6 True? Or not true?

7 **MR. PORRITT:** Object to form. Vague and ambiguous.

8 **THE COURT:** Overruled.

9 **THE WITNESS:** There's a large academic literature that
10 analyzes Black-Scholes, the Black-Scholes model, relative to
11 more complex models that have multiple volatility factors and
12 jump factors. I've seen two- and three-factor models, and
13 developed some myself.

14 **BY MR. ROSSMAN**

15 **Q** Can you answer my question, please?

16 **A** So yes, there is a literature that tries to address
17 deficiencies of the Black-Scholes model.

18 **Q** And one of those well-recognized deficiencies that you
19 told me about even in your deposition, Professor, is it's not
20 good at pricing levels.

21 **A** I think I said that it's a better measure, potentially, a
22 better-documented measure of changes or --

23 **Q** Than of levels.

24 **A** -- levels. It might be even more accurate in changes than
25 in levels.

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1 **Q** Levels are prices. Right?

2 **A** Yes.

3 **MR. ROSSMAN:** Thank you, Your Honor.

4 **THE COURT:** All right. Anything more?

5 **MR. PORRITT:** Nothing further, Your Honor.

6 **THE COURT:** All right. Thank you, Doctor, you may
7 step down. You are excused.

8 (Witness excused)

9 **THE COURT:** And we should go ahead and take our
10 morning break. We will resume in 20 minutes.

11 Thank you.

12 **THE COURTROOM DEPUTY:** All rise for the jury.

13 (The following proceedings were held outside of the
14 presence of the Jury)

15 **THE COURT:** Go ahead.

16 **MR. PORRITT:** On the issue regarding the exhibits or
17 the admissibility of exhibits with Dr. Hartzmark.

18 **THE COURT:** Yes.

19 **MR. PORRITT:** We've submitted a trial brief on that
20 issue, Your Honor, I just wanted to hand you up a hard copy for
21 the Court's convenience.

22 (Document handed up to the Court)

23 **THE COURT:** This is on the question of the slides or
24 something else?

25 **MR. PORRITT:** Yes, on the slides.

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1 **THE COURT:** Okay.

2 **MR. SPIRO:** Your Honor, again, the Court has a
3 well-established practice. And a few times now during this
4 trial we've gotten ourselves in a situation where something is
5 being filed as the witness is testifying, and there's been a
6 miss of the Court's deadlines. And I'm not here to be the
7 deadline police, but it's prejudicing the defendants because we
8 don't have an opportunity to testify.

9 And this has the opportunity for manifest prejudice
10 because, again, we believe it's many levels of hearsay, and an
11 end-around the expert report rules, and opinions that weren't
12 disclosed --

13 **THE COURT:** Well, objections were stated, the response
14 was stated, my views were stated. And one of my questions was:
15 Is there any authority?

16 I asked specifically, each side: Do you have any cases on
17 this question about whether there's analysis of 1006 or whether
18 it's appropriate or not with respect to conclusions on the
19 numerical things?

20 And, and each of you said you'd tell me something during
21 the break. And if you got something now, I'll look at it.

22 **MR. PORRITT:** This contains the verdict form for
23 *Vivendi*, Your Honor, our securities class action where the
24 verdict form clearly shows that the jury took back with them an
25 exhibit containing the various inflations for stock inflations,

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1 and there was a plaintiff one and a defendant one, and they're
2 explicitly directed to refer to those exhibits when setting the
3 level of inflation for stock price. So I think it's directly
4 relevant.

5 **MR. SPIRO:** So, very glad that he pointed that out.
6 Both sides submitted in that case on consent, because the Court
7 rightfully understood that 1006 does not apply to opinions. It
8 just doesn't.

9 **THE COURT:** Well, I don't have -- if you have a
10 transcript of the Court's analysis. You know, if this was done
11 by stipulation, that's one thing. If it was done over
12 objection, it's something else. I would like to see the
13 analysis.

14 **MR. SPIRO:** I think the plaintiffs just suggested to
15 the Court the same thing I'm saying. It was done on agreement
16 of both sides to both put in their -- right, their suggested
17 forms.

18 In this case, again, we don't have a competing form, we're
19 not required to. They have the burden of proof. So it's
20 burden-shifting. It's improper for them to do it when we don't
21 have an opportunity to, and it's improper to not have it on
22 consent.

23 Again, 1006, as the cases make unquestionably clear, is
24 not to summarize opinions.

25 **THE COURT:** All right. If you -- well, their

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1 authority is apparently not more -- is more than just a verdict
2 form. And it talks about the 7th Circuit decision apparently
3 opining; I'll have to look at it.

4 And, and, although it's unclear. It says: The jury was
5 given a demonstrative exhibit. Was it a demonstrative? Or was
6 it an exhibit? I can't tell from this description. But
7 there's two cases cited, and I'll look at them.

8 **MR. PORRITT:** We refer to the model jury instructions,
9 too, in the Ninth Circuit, which I think allow for
10 demonstratives and exhibits to be used for the calculation of
11 damages.

12 **THE COURT:** There's a model jury instruction?

13 **MR. APTON:** Your Honor, at the end of the brief, if I
14 could just borrow that, I think it's -- 2.15. So, I mean, the
15 model jury instructions do specifically allow for this.
16 There's an instruction to be given when this happens.

17 And again, Your Honor, the other case law cited does make
18 it clear that this is not -- well, not out of the ordinary.

19 **THE COURT:** Does this jury instruction address expert?
20 It's one thing to have summary charts come in under 1006.

21 But --

22 **MR. APTON:** Your Honor, I think to have a lay witness
23 present demonstratives is probably the more un- -- atypical
24 thing to do. So, my understanding is that this would apply to
25 expert witnesses.

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1 **MR. SPIRO:** The answer is it does not apply. What
2 he's cited does not apply to expert witnesses, as the Court
3 notes. And it doesn't apply to opinions, which is why it
4 doesn't apply to --

5 **THE COURT:** Do you have any authorities your team
6 wants me to look at?

7 **MR. SPIRO:** We're going to send something in. And I
8 would simply ask, because I think this is a critical moment in
9 the trial, to be able to address this briefly --

10 **THE COURT:** Well, all right. I don't have to make a
11 decision of admission at this point. I will continue to -- if
12 needed, I'll remind the jury about a demonstrative generally.
13 I think I've already told them that. We can make that decision
14 later on.

15 **MR. SPIRO:** Thank you, Your Honor.

16 **THE COURT:** Okay? Thank you.

17 **THE COURTROOM DEPUTY:** Court is in recess.

18 (Recess taken from 10:35 a.m. to 11:01 a.m.)

19 (Jury enters the courtroom at 11:01 a.m.)

20 **THE COURT:** Okay. Please be seated, everyone. Thank
21 you.

22 Okay. We're going to continue with the plaintiffs' case,
23 and you may call your next witness.

24 **MR. PORRITT:** Your Honor, plaintiff calls Dr. Michael
25 Hartzmark.

HARTZMARK - DIRECT / PORRITT

1 **THE COURT:** Okay. Administer the oath.

2 **MICHAEL HARTZMARK,**

3 called as a witness for the Plaintiffs, having been duly sworn,
4 testified as follows:

5 **THE WITNESS:** Yes.

6 **THE CLERK:** Thank you. Please have a seat.

7 **THE WITNESS:** Thank you.

8 **THE CLERK:** Please speak clearly into the microphone.
9 State and spell your first and last name for the record.

10 **THE WITNESS:** Yes. My name is Michael Hartzmark. And
11 that's M-I-C-H-A-E-L; Hartzmark, H-A-R-T-Z-M-A-R-K.

12 **THE COURT:** All right. Thank you, Dr. Hartzmark.
13 You may proceed, Mr. Porritt.

14 **MR. PORRITT:** Thank you, Your Honor.

15 **DIRECT EXAMINATION**

16 **BY MR. PORRITT**

17 **Q.** Good morning, Dr. Hartzmark.

18 **A.** Good morning.

19 **Q.** Can you please tell us about your education?

20 **A.** Yes. I received my Bachelor's from University of
21 Michigan, and I received it with high honors and Phi Beta
22 Kappa.

23 I then went to University of Chicago and received my
24 Master's and PhD in economics.

25 **Q.** And could you summarize your professional experience,

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1 please.

2 **A.** Well, my professional experience is somewhat eclectic.
3 Currently I'm the president of Hartzmark Economics Litigation
4 Practice, a firm that applies the principles of economics,
5 finance, and statistics to solve problems such as we're going
6 to talk about today related to this Tesla matter.

7 I've had about 20 years of doing those -- that type of
8 consulting for various firms. My first exposure as an
9 economist, which is a 45-year history, was for the Government.
10 I was at the U.S. Treasury. I was at the Commodity Futures
11 Trading Commission.

12 I then went and had a 10-year track faculty position at
13 University of Michigan. I was Joint in the Business School in
14 the Economics Department, the first person to have gotten that
15 opportunity.

16 And from there, I went and I had some corporate experience
17 where I ran a company called Cragar that makes Cragar wheels.
18 I was the CEO, and I was also CFO of another public company.

19 **Q.** And you've submitted expert reports and testimony in other
20 litigation cases?

21 **A.** Yes.

22 **Q.** And those reports have been accepted by Courts?

23 **A.** Yes. My testimony has been credited and relied upon by
24 Courts across the country.

25 **Q.** And have you published any peer-reviewed scholarly

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1 articles?

2 **A.** Yes. I've -- I've published, especially when I was in --
3 on the faculty at University of Michigan, and I also was a
4 visiting scholar at University of Chicago. I published in some
5 of the most prestigious economics journals that are peer
6 reviewed in the economics profession. I've also published a
7 variety of scholarly articles.

8 **MR. PORRITT:** At this point, Your Honor, we would
9 proffer Dr. Hartzmark as an expert in the field of economics
10 and finance and securities markets.

11 **THE COURT:** Any objection?

12 **MR. ROSSMAN:** No objection to Dr. Hartzmark's
13 qualifications. We preserve our prior objections.

14 **THE COURT:** All right. Thank you.

15 He is so certified and may testify.

16 **MR. PORRITT:** Thank you, Your Honor.

17 **BY MR. PORRITT**

18 **Q.** So were you retained by plaintiff to provide expert
19 testimony in this matter?

20 **A.** Yes.

21 **Q.** And what were the areas in which you were asked to provide
22 testimony?

23 **A.** Well, as I mentioned, economics, finance and statistics,
24 and it was applied to five different areas.

25 First, I was asked to look to see whether the Tesla stock

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1 options and common stock traded in what are called open,
2 well-developed and efficient markets.

3 Second, I was asked as to whether the tweets caused a
4 material impact on the price on August 7th.

5 Third, I was asked to examine whether the losses were
6 proximately caused and linked to the tweets over the period
7 from August 7th to 17th.

8 Fourth, I was asked to examine and determine whether you
9 could measure the artificiality or the distortion of prices
10 over that period.

11 And then, finally, I was asked whether there was a
12 formulaic methodology that could be applied using that
13 artificiality to calculate individual investor damages.

14 **Q.** That's a lot, but we'll go through it today.

15 As part of this engagement, did you review any data or
16 other information?

17 **A.** For the purposes of this litigation, I reviewed literally
18 thousands and thousands of documents. I started with the data.
19 I'm a data monger. We -- I had price data for all the options,
20 for all the notes, for the common stock, volume data for all of
21 those as well, as well as variety of other data that is not
22 really relevant as it relates to damages today.

23 I also had just an extensive record of public documents:
24 SEC filings, news reports, analyst reports, blog posts, tweets.
25 I mean, I can sort of go on and on.

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1 Basically there were 2400 different records in my database
2 that were associated with articles and such that I had
3 reviewed, over 50 analyst reports. And understand this is a
4 ten-day period. So approximately five analyst reports a day.

5 I also examined some media information. I think some that
6 we might be able to share with you today.

7 And then, finally, there's internal documents. I mean,
8 there's a massive record. Although my focus there was mostly
9 on the internal emails.

10 **Q.** Thank you.

11 And why did you look at these differing categories of
12 documents in performing your analysis?

13 **A.** Well, as a standard -- as an economist, it's often the
14 case that you look to us for statistics. Okay? But you can
15 get a statistician to do that.

16 Okay. As an economist, to try to give you some input into
17 issues associated with materiality or loss causation, it's up
18 to me to evaluate basically a basket of information; to not
19 only look at statistics and price movements, but to ask the
20 question: Why? And is there -- are there -- is there
21 information in the record as to why we might observe certain
22 types of things?

23 So it's very important that you -- you know, you look at
24 everything and put it all together to do an evaluation of the
25 type that I was asked to do.

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1 Q. And going to the first area, did you reach an opinion
2 regarding the market efficiency for Tesla common stock and
3 options?

4 A. Yes. I found that the common stock and stock options of
5 Tesla traded in open, well developed, and efficient markets.

6 I also found that -- as it related to the notes, that at
7 least for the price movements they were consistent with what
8 you would expect in an efficient market.

9 Q. Okay. And could you explain what is meant by this concept
10 of an efficient market?

11 A. Yes. An efficient market is basically -- it's an academic
12 phrase, although it's used in the trade as well, but it is such
13 that it's -- the information in the market is impounded in the
14 price. So that when you look at a price, it's got every
15 information. All the information that comes together is
16 aggregated and it's a consensus.

17 Furthermore, and one of the ways you look to test it, is
18 any new, unanticipated material information is quickly or
19 rapidly impounded into the market price, and so you can see
20 that it reflects this new information.

21 Q. And the class period in this case starts August 7th;
22 correct?

23 A. That's correct.

24 Q. Okay. And did you look at August 7th -- the data for
25 August 7th to see if there was evidence of market efficiency?

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1 **A.** Yes.

2 **Q.** And did you prepare a demonstrative showing the data that
3 you looked at?

4 **A.** Yes.

5 **MR. PORRITT:** If we could show the witness Slide 47, I
6 think it is, and publish to the jury as a demonstrative.

7 **THE COURT:** All right.

8 (Document displayed.)

9 **BY MR. PORRITT:**

10 **Q.** Do you see that in front of you, Dr. Hartzmark?

11 **A.** Yes, I do.

12 **Q.** And is this something that you prepared?

13 **A.** Yes, I did.

14 **Q.** Okay. And could you please explain what this shows?

15 **A.** Well, this is -- and this, I hope, will in some sense put
16 numbers to your words. If you're a numbers person like me,
17 maybe you'll enjoy it.

18 What you see here is what is called an intraday price and
19 volume chart. Literally minute by minute we're looking at
20 trading volume and prices.

21 And this is for the Tesla common stock. So what you can
22 see with the blue line is the price movements over the day on
23 the day in question, August 7th, 2018. The bars underneath it
24 are -- are associated with the volume of trade.

25 And what you see here is basically -- it's probably the

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1 best example, we use it in the classroom, of market efficiency
2 that you could imagine because, as I said, you want to see -- a
3 market is efficient if new, unanticipated material information
4 is incorporated into the price rapidly.

5 And you can see right here at 12:47 pre-tweet with a price
6 at 356.85, there -- the tweet is then -- comes up at 12:48 p.m.
7 Eastern time, and Musk tweets (as read):

8 "Am considering taking Tesla private at 420. Funding
9 secured."

10 And look at that spike. You can see immediately you have
11 a spike in volume, a spike in the price, and -- which, again,
12 is a quintessential example of market efficiency.

13 The price then wanders up to \$367.25 at 2:08 p.m. Eastern,
14 when -- when the trading is halted, and we'll talk about that a
15 little later.

16 When -- at 3:36 p.m. Eastern time Mr. Musk tweets
17 (as read):

18 "Investor support is confirmed. Only reason why this
19 is not certain is that it's contingent on a shareholder
20 vote."

21 And that's in the middle. That's why trading is halted.

22 Immediately at 3:45 when trading resumes, again, as you
23 would expect in an efficient market, the price immediately
24 spikes up. Tremendous amount of volume ending the day a little
25 bit lower than its peak. It ends the day at \$379.57.

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1 So this, to me, is a wonderful example of an efficient
2 market.

3 **Q.** And what did this increase in stock price from 12:48 p.m.
4 Eastern to the close, what did that represent in terms of the
5 market capitalization of Tesla?

6 **A.** Well, it -- there were approximately 170 million shares of
7 Tesla outstanding at this particular time, and that -- that
8 price increase would represent almost \$4 billion of actually
9 profits for certain people.

10 **Q.** Did you look at any other data when evaluating the
11 efficiency of the Tesla market with the focus on August 7th?

12 **A.** Yes.

13 **Q.** And what was that?

14 **A.** Well, I -- in terms of, again, the quantitative side of
15 what I was looking at, I looked at some of the implied
16 volatility movements and movements in option pricing.

17 **Q.** Okay.

18 **MR. PORRITT:** If we could show the witness Slide 16 as
19 a demonstrative and publish.

20 (Document displayed.)

21 **BY MR. PORRITT:**

22 **Q.** Do you recognize this chart, Dr. Hartzmark?

23 **A.** Yes. This is a chart that I took from Professor Heston --
24 hopefully, the jury remembers it -- although I modified it
25 slightly to take into account and show certain other attributes

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1 of the chart, and this is the price of standardized ATM-forward
2 straddles.

3 **Q.** Okay. And what do you -- what conclusions did you draw
4 from this chart?

5 **A.** Well, you can see that for the most part through the 6th
6 and the 7th, the price of the standardized ATM-forward
7 straddles are stable.

8 And then at 12:48, as Professor Heston described, there is
9 some incredibly anomalous movements whereby the longer-term
10 options have a precipitous decline. The short-term options
11 have a rise. So you have this anomalous situation that I think
12 Professor Heston described.

13 **Q.** Okay. And did you see anything in the pricing of the
14 convertible notes on August 7th as well?

15 **A.** Yes. The same type of -- it was very similar to the stock
16 price table that I just did, except there was no trading halt
17 in the notes.

18 **Q.** Okay. And then looking forward to the rest of the class
19 period, did you reach any findings regarding market efficiency
20 for the period August 8th through August 17th?

21 **A.** Yes. And I think a demonstrative might help with
22 explaining this to the jury.

23 **MR. PORRITT:** If we could publish Slide 46.

24 (Document displayed.)

25

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1 BY MR. PORRITT:

2 Q. And this is a chart you prepared as well?

3 A. Yes.

4 Q. Okay. And what does it show?

5 A. This, again, is intraday data. So this is literally
6 minute-by-minute price and volume.

7 You can see on the left side of your screen where Mr. Musk
8 tweets and then the trading halt -- okay? -- and the peak that
9 goes on and the close at 379 there.

10 And then what you see is a journey downward as -- as --
11 well, we'll explain why we see this journey. This journey
12 downward to the 17th of August when the *New York Times*
13 publishes the interview with Mr. Musk. And the journey goes
14 from about 379, 380 to 305, which represents a loss now of
15 about \$12 billion to, you know, investors, whether it be
16 retirement, pension funds, any types of investors.

17 Q. Okay. And did you also look at changes in implied
18 volatility during -- for stock options during this period as
19 well?

20 A. Yes, I did.

21 Q. Okay.

22 MR. PORRITT: And if we could show the witness
23 Slide 40.

24 (Document displayed.)

25

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1 BY MR. PORRITT:

2 Q. And is this a slide that you prepared?

3 A. Yes.

4 Q. Okay.

5 MR. PORRITT: Is this published to the jury?

6 THE CLERK: Uh-huh.

7 MR. PORRITT: Thank you.

8 THE CLERK: You're welcome.

9 BY MR. PORRITT

10 Q. Okay. And what do you -- what does this -- what are you
11 showing on this chart that you prepared?

12 A. Yeah, I hope this isn't too geeky for the jury, but this
13 is -- it's actually a very dramatic slide. You can almost see
14 a mirror image of the price movements that we've described in
15 the previous intraday movements -- these are daily closes --
16 and the implied volatility that Professor Heston calculated.

17 And so you see the journey of the price going up at the
18 tweet and the journey down to 305. You see the implied
19 volatility collapsing at the tweet, and then moving up slightly
20 with the price, and then sort of languishing or just wavering
21 in this mid-period. And then with the publication of the *New*
22 *York Times* article, a climb which, for the most part, goes back
23 to the original pre-tweet value.

24 Q. And, again, based on all your work you just described,
25 what is your opinion regarding the market efficiency for Tesla

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1 stock and stock options -- stock and stock options and
2 convertible notes?

3 **A.** Well, if you combine all of this price data, volume
4 data -- we're going to get into other issues, qualitative
5 issues -- the options data, these markets are highly efficient.

6 **MR. ROSSMAN:** Objection, Your Honor. There's a scope
7 issue in terms of the expert's reports.

8 **THE COURT:** I thought that was part of his opinion.

9 **MR. ROSSMAN:** Not on -- not on the notes. There's no
10 opinion on the efficiency notes.

11 **THE WITNESS:** I'm sorry. I misstated. The notes are
12 consistent with market efficiency in the prior slide.

13 **MR. ROSSMAN:** That's outside of the scope.

14 **THE COURT:** The jury will disregard the comment about
15 the notes. Beyond the scope.

16 **BY MR. PORRITT**

17 **Q.** And you -- also, I think you said the second area you were
18 asked to give an opinion on was on the economic materiality of
19 the August 7th tweets; is that correct?

20 **A.** Yes.

21 **Q.** All right. And what does it mean for information to be
22 economically material?

23 **A.** Well, I think it's very important for the jury to
24 understand. Basically information is material, as from an
25 economic perspective, when it's important to investors, when it

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1 will change the mix and alter buying and selling decisions.

2 **Q.** And starting from -- starting with August 7th, what is
3 your opinion as to whether, from an economic perspective, the
4 August 7th tweets caused a material increase in prices of Tesla
5 or a material impact on prices of Tesla securities?

6 **A.** Yeah. My opinion is that the tweets caused a material
7 impact on the prices of the Tesla stock.

8 **Q.** And what's that opinion based on?

9 **A.** Well, again, it's based -- as I said, I'm an economist. I
10 use statistics, but it goes well beyond statistics.

11 It's also based on what I'll call qualitative factors, and
12 that's an examination of those qualitative factors I listed
13 before: Analyst reports, news stories, et cetera.

14 **Q.** Okay.

15 **MR. PORRITT:** And if we could show the witness -- go
16 back to Slide 47.

17 (Document displayed.)

18 **BY MR. PORRITT:**

19 **Q.** Is this -- again, this data is something you considered
20 when -- in regard to the materiality of the tweets on
21 August 7th?

22 **A.** Yes. We come back to this slide for -- for the purpose of
23 showing you actually the gap. You can see at 2:08 p.m. trading
24 was halted by NASDAQ pending new information or pending
25 information.

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1 The trading halt in NASDAQ was basically because it was at
2 least NASDAQ's opinion that there was material information that
3 was going to be disclosed and so that -- that in and of itself
4 would support -- when you have the Exchange taking certain
5 actions, that's a suggestion, again, that there's potentially
6 material -- that information is material.

7 **Q.** And did you do any statistical analysis as part of your
8 assessment of materiality?

9 **A.** Yes. If you look at the movement from 356 to 379, I --
10 using the intraday data, I implemented what is called an event
11 study. An event study is a regression. A regression is sort
12 of creating a line. And what -- what you do is you try to take
13 Tesla's price movements and remove outside influences, such as
14 general market behavior -- market movements. So if the market
15 goes up and Tesla goes up, then there's no, you know, real
16 Tesla-specific movement and industry movement.

17 So I ran this regression, which is a scientific
18 academic-based, wildly utilized approach. In fact, I've used
19 it in every securities case that I've been involved in. And
20 you -- you extract these outside influences and you create what
21 is called an abnormal return or a Tesla-specific return.

22 And in this particular case, I found that \$23.27 was the
23 abnormal return, which actually is greater, which would suggest
24 that Tesla outperformed the market on that day.

25 **Q.** And that 23.27 abnormal return is just on August 7th; is

1 that correct?

2 **A.** That's correct. And it's actually 23.27 from the
3 pre-tweet price to the close.

4 **Q.** And did you also do a similar event study for the entire
5 class period?

6 **A.** Yes, I did. In that case I used daily data because I was
7 testing the ten-day class period. And there I found that there
8 was a -- a -- I'm sorry, a -- an abnormal price movement of
9 \$66.67, and it was -- well, we don't have the graph here, but
10 it is -- basically is the amount of the decline over the ten
11 days that adjusts for the outside influences.

12 The other thing that I'll say is that the nature of an
13 event study and this regression allows me to then use
14 statistical testing to determine whether that is large enough
15 to be considered important or what I look at as to be outside
16 the bounds of what would be expected just by, let's say,
17 chance. And in both cases the increase and the decrease, the
18 statistical tests suggested that they were both what are called
19 statistically significant and -- and you use -- there's a
20 bright line which basically says at a 95 percent confidence.

21 **Q.** Okay.

22 **MR. PORRITT:** And if we could show the witness
23 Slide 2.

24 This is another demonstrative you prepared. We looked at
25 earlier .

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1 Not Slide 2. I take it back. I apologize. Slide 46.

2 Sorry. Wasn't even close.

3 (Document displayed.)

4 **BY MR. PORRITT**

5 **Q.** Is this the effect on the overall class period you were
6 just describing?

7 **A.** Yes. The price goes down \$74, but the abnormal
8 Tesla-specific return is \$66.67, which is statistically
9 significant. So basically it means that out of this decline of
10 about \$7.40 is associated with the general market and industry
11 price movements.

12 **Q.** And did you also in considering the materiality of the
13 August 7th tweets look at the qualitative information?

14 **A.** Yes.

15 **Q.** And why do you do that?

16 **A.** Well, again, qualitative information asks -- answers two
17 questions.

18 One: Is it consistent with what you observed with your
19 statistics, with the price movements? It sort of answers the
20 question: Why?

21 The other is that it can help discuss -- help you evaluate
22 materiality because you can see what it is that investors are
23 interested in via news reports, analyst reports, and such.

24 **Q.** And what did you look at as part of your qualitative
25 analysis over the -- over the class period?

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1 A. Well, again, I looked at 2400 news articles and 54 analyst
2 reports, so...

3 Q. And did you look at this together with the quantitative
4 information?

5 A. Yes.

6 Q. And what did you find in connection with your analysis of
7 the qualitative and quantitative information over the class
8 period?

9 A. Well, again, the quantitative information suggests it's
10 material from a statistical perspective, but the qualitative
11 information also suggests that the tweets were material based
12 on an examination of the qualitative information.

13 And I have some, I think a smattering. Again, remember, I
14 have 2400 different articles, but I won't share them all with
15 you.

16 Q. And did the material impact of the tweets, did that also
17 apply to stock options?

18 A. Yes.

19 Q. And what about convertible notes?

20 A. Yes.

21 Q. Okay. Going back to August 7th, we've talked about
22 Slide 47 and the evidence of materiality on that.

23 Was there any other thing -- anything else you looked at
24 qualitatively on August 7th that was relevant to your opinion
25 on materiality?

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1 **A.** Yes, I did.

2 **Q.** What was that?

3 **A.** Various news articles and analyst reports.

4 **Q.** Okay. So what was the first thing you did --

5 **A.** Oh. I --

6 **Q.** -- chronologically within August 7th that you looked at?

7 **A.** Yeah. I mean, there was news, analysts, but what really
8 caught my attention was actually a TV -- a CNBC discussion
9 right about the time of the trading halt where Michael Santoli,
10 who is a regular commentator on CNBC --

11 **MR. ROSSMAN:** Objection.

12 **THE COURT:** Hold on.

13 **MR. ROSSMAN:** He's now going to narrate what the
14 evidence is?

15 **MR. PORRITT:** He's -- he's laying a foundation.

16 **MR. ROSSMAN:** It's not in his report, Your Honor.

17 **MR. PORRITT:** He's laying his foundation for the --

18 **THE COURT:** Overruled.

19 **MR. PORRITT:** Thank you.

20 **A.** -- where Michael Santoli discussed the tweets.

21 **MR. PORRITT:** Okay. At this point we will show the
22 jury the video clip, please.

23 (Videotape played in open court, not reported.)

24 **MR. PORRITT:** And that's Exhibit 521.

25

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1 BY MR. PORRITT

2 Q. Why is -- why was this video clip important to you as an
3 economist?

4 A. Well, again, for a TV station to take this amount of time
5 to express and communicate this would suggest that that's
6 information that at least they consider to be important to
7 investors.

8 Q. And is there other information you looked at in assessing
9 the materiality of the August 7th tweets from August 7th
10 itself?

11 A. Yes.

12 Q. What was that?

13 A. Well, I've looked, as I mentioned, to print media and
14 analyst reports.

15 Q. I think you said earlier you looked at internal Tesla
16 communications; is that correct?

17 A. Yes. The third -- third area that I looked at were
18 internal Tesla communications to also evaluate whether
19 investors were interested in the information.

20 MR. PORRITT: And if I could show the witness
21 Exhibit 63, the slide -- sorry. Slide 63, the demonstrative.

22 (Document displayed.)

23 BY MR. PORRITT

24 Q. Do you see that?

25 A. Yeah. This, I believe, I understand is Pacific time, so

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1 it's after the market closes and after the tweets. And this is
2 an email from Mr. Ahuja to Mr. Musk basically saying (as read):

3 "We are getting a lot of inquiries from investors,
4 SEC, and media to better understand the comment 'funding
5 secured.'"

6 **Q.** Okay. Again, what impact did this have on your views on
7 the materiality of the August 7th tweets?

8 **A.** This would suggest, again -- again, this is the
9 quintessential issue. Investors are interested in this
10 information and in this particular case with this email
11 specifically "funding secured."

12 **Q.** And did you see other evidence from Tesla regarding the
13 materiality of the August 7th tweets on August 7th?

14 **A.** Yes. I saw a number of other emails, and I think I've got
15 demonstratives.

16 **Q.** Right.

17 **MR. PORRITT:** So if I could show the witness
18 Exhibit 65 -- sorry, Slide 65.

19 **THE COURT:** Slide 65?

20 **MR. PORRITT:** Yes.

21 (Document displayed.)

22 **A.** Yes. I mean, this is a communication between Tesla's IR
23 Department and an analyst. And I think, again, critical issue
24 there, again, the analyst wants some -- you know, what does
25 "funding secured" actually mean. And at the top (as read):

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1 "It means that financing is secured regardless of
2 other assumptions."

3 And so -- you know, and this also suggests that this
4 wasn't discussed with any shareholders prior to today's tweet.

5 **MR. PORRITT:** Okay. If I could show the witness Slide
6 66.

7 (Document displayed.)

8 **A.** Again, from another analyst trying to get some
9 clarification associated with financing being secured, where
10 Mr. Viecha says (as read):

11 "I can only say that the first tweet clearly stated
12 that, quote, 'Financing is secured. Yes, there is a firm
13 offer.'"

14 **BY MR. PORRITT:**

15 **Q.** Finally, if I could show you Slide 69.

16 (Document displayed)

17 **Q.** This is another email that you looked at?

18 **A.** Yes. This is an email communication between, again,
19 Mr. Viecha at Tesla and Mr. Koney, who I believe is an investor
20 and, again, asking, you know, that -- basically saying things
21 were unusual.

22 And then down there Mr. Viecha says (as read):

23 "The offer is as firm as it gets."

24 **Q.** And what does this back-and-forth between Tesla Investor
25 Relations and these investors and analysts tell you as an

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1 economist?

2 **A.** Well, as I mentioned, materiality from an economic
3 perspective is -- does a mix of information change that would
4 motivate buyers and sellers to take action. And this is --
5 again, this is the quintessential proof that this is -- that
6 this is material information because investors are interested
7 in it.

8 **Q.** And you're aware that Elon Musk and Tesla published an
9 email to employees, publicly published an email, concerning his
10 purported rationale for going-private on August 7th?

11 **A.** Yes. I believe there was an email that he sent out to
12 employees that was then published, I believe on a blog, along
13 possibly with the information about the investor support
14 confirmed. I don't know if that was exactly at the same time.

15 The email that was mostly sort of a justification of why
16 he wanted to go private, but it didn't discuss really details
17 of the funding or the details associated with investor support.

18 **Q.** Do you know whether these inquiries from the various
19 analysts and investors came before or after that email was
20 published?

21 **A.** Well, given the time of these -- of these emails, the --
22 the blog, I believe, was sometime on or before 3:30, or about
23 that time, Eastern time on August 7th. And these all came
24 afterwards, so it's obvious that there's still questions about
25 the information.

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1 **MR. ROSSMAN:** Objection, Your Honor. Can we just get
2 a clarification on the date stamps? It seems all over the
3 place on this document.

4 **THE COURT:** Well, are we talking about --

5 **MR. PORRITT:** These exhibits -- these exhibits are all
6 in evidence, I believe, and so --

7 **THE COURT:** All right. Well, if they're in evidence,
8 the jury can look at the date stamps -- time stamps.

9 **MR. ROSSMAN:** It's the time zones I'm concerned about,
10 Your Honor. I'm not sure what the witness just said is
11 accurate.

12 **THE COURT:** All right. Maybe you should use an
13 example or something so we can look at the time zone. Because
14 there's some confusion about Universal time, Eastern time,
15 Pacific time.

16 **BY MR. PORRITT**

17 **Q.** Well, if we can refer you back to Slide 69, that's what we
18 have up here, you see that lower time there on the email in the
19 middle there from Martin Viecha to Mr. Koney? Do you see
20 that's at 4:55 p.m.? Do you see that?

21 **A.** Yes.

22 **Q.** And whether or not that's Eastern time or Pacific time,
23 that's after the email was published; isn't that correct?

24 **A.** Yes. The market closes at 4:00, so it would be either
25 400 o'clock Eastern or -- what is that? -- 7:55 Eastern if it's

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1 4:55 Pacific.

2 **Q.** Okay. Did you also look at analyst reports following the
3 August 7th tweets?

4 **A.** Yes.

5 **Q.** And why did you do that?

6 **A.** Well, analysts are an important conduit between the
7 company and the investors. They help digest, process and then
8 disseminate information, and their views could be very
9 important, especially, you know, their views could, you know,
10 help, again, in some sense potentially move markets. They're
11 very important.

12 **Q.** All right.

13 **MR. PORRITT:** So if I can show the witness Exhibit 15
14 already in evidence.

15 (Document displayed.)

16 **BY MR. PORRITT**

17 **Q.** And is this an analyst report that you reviewed?

18 **A.** Yes. This is an analyst report that was issued on the 8th
19 of August by JPMorgan, and the lead analyst is Ryan Brinkman,
20 and it's a discussion about the -- the proposed Tesla tweets.
21 And there's a number of interesting information related to
22 this, and so I wanted to bring this to your attention.

23 The -- basically it says (as read):

24 "Tesla CEO announced via Twitter that he is
25 considering pursuing a path (no final decision has been

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1 made) which would take the company private at a price of
2 \$420 per share. This was followed up by further
3 statements that 'funding has been secured'" -- and that's
4 in quotes, and then quote -- 'investor support
5 confirmed,'" end quote. "As surprising to us as these
6 developments are, and as lacking as the statements are in
7 any details regarding who is expected to provide the
8 required amount of financing and on what terms" -- and
9 this is the important -- "they are, nonetheless,
10 declarative statements from the CEO of a public company
11 which we feel should be considered seriously. Either
12 funding is secured or it's not secured, and Tesla's CEO
13 says funding is secured."

14 So that's -- that's one area of interest.

15 If you go down below, you can see in the details of the
16 proposed transaction (as read):

17 "Tesla provided no details regarding the needed
18 funding, except to say it had been secured."

19 And that's going to be an important theme as we go
20 forward.

21 And then, finally, if you go all the way up to the top,
22 you can see that JPMorgan raised the price target. If you look
23 at your screen way over to the left under the gray Tesla, it
24 says (as read):

25 "Raise PT to reflect impossible go-private offer."

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1 That's the price target.

2 Analysts will often give a price target because it makes
3 it easy for their clients, and it gives them one number to make
4 their decision by.

5 But raising a price target really -- in fact, I believe I
6 had read testimony from Mr. Brinkman -- has to be authorized at
7 JPMorgan if he's going to increase it by a certain amount,
8 and -- because it -- it's a very serious decision to make and
9 generally, indeed almost always, it comes when there are
10 earnings and guidance changes. This is very unusual to see a
11 price target change in sort of a non-earnings situation.

12 **MR. ROSSMAN:** Objection. Your Honor, at this point,
13 given that the witness seems to be giving quite a commentary on
14 the evidence in the case, I think it's appropriate to ask the
15 Court to provide the expert instruction to the jury.

16 **THE COURT:** I've already given that instruction.
17 Overruled.

18 **BY MR. PORRITT**

19 **Q.** You've just read what Mr. Brinkman thought about the words
20 of "funding secured." Do you have a definition of "funding
21 secured"?

22 **A.** Well, my definition is consistent, I think, with the
23 emails because I've looked at them and that's sort of from
24 Tesla, you know, "firm offer." I'd seen some analysts say
25 "locked and loaded."

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1 But the jury needs to understand, my definition of
2 "funding secured" isn't -- I don't consider particularly
3 relevant in this particular matter. The issue is: What did
4 the market think? Because the market is where -- the market
5 price is reflecting that, and any harm to investors associated
6 with that is coming from the market and not from one
7 individual's definition.

8 **Q.** And if I could refer you to slide -- now it's Slide 2.

9 (Document displayed.)

10 **A.** This is another analyst -- okay? -- RBC, Royal Bank of
11 Canada, and the headline in this particular is the first
12 sentence (as read):

13 "Elon's tone and messaging regarding a potential
14 transaction lead us to believe that there could be
15 significant outside funding lined up."

16 There's also, you can see lower on, a mention of the
17 Saudis having their 3 to 5 percent stake.

18 **Q.** And is this consistent with the tone of other analyst
19 reports you reviewed around August 7th and August 8th?

20 **A.** Yes.

21 **MR. PORRITT:** And if we could go back to Slide 47.
22 That's the August 7th intraday chart.

23 (Document displayed.)

24 **BY MR. PORRITT**

25 **Q.** Did you look for other news unrelated to the tweets that

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1 might have affected Tesla stock price on August 7th?

2 **A.** Yes, I did.

3 **Q.** And why did you do that?

4 **A.** Well, it's important when you're looking at price
5 movements at a stock to make sure that there aren't other
6 factors that might be moving.

7 As I mentioned, you have the market and industry, and I
8 accounted for that when I ran my regressions and event study to
9 calculate the \$23.27, but you want to make sure that there
10 aren't other -- other factors, other information, that might be
11 driving the price change.

12 And on August 7th, in particular, you can see at
13 12:17 p.m. there was a *Financial Times* article. This is prior
14 to the tweet. You can see there, as with the tweet, there was
15 an immediate response of the market price to this unanticipated
16 material information, which is, again, consistent with an
17 efficient market. There was a substantial amount of volume,
18 although not nearly the type of volume you had when the tweet
19 was issued.

20 Now the issue is: What happened with that information?
21 And my analysis showed, and you can see it graphically, that by
22 the time of the tweet, the price had sort of settled and
23 stabilized as had the volume, which would suggest that the
24 information had been incorporated into the price. And you can
25 see the information is incorporated in the price pretty quickly

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1 in all of these particular points of reference.

2 Q. And did you also look at the impact of the *Financial Times*
3 article on the volatility of Tesla stock options?

4 A. Yes, I did.

5 MR. PORRITT: And if we could show Slide 16 again,
6 please.

7 (Document displayed.)

8 A. This slide, again -- and hopefully you'll remember from
9 Professor Heston -- I've put a line in in addition to his at
10 12:17. And you can see that on this particular day, as
11 actually would be expected with something of the nature of the
12 Saudi investment, the short-term options, the volatility has
13 gone up. The options are a little more valuable.

14 But the -- for the most part, the long-term options are
15 relatively stable.

16 BY MR. PORRITT

17 Q. And did you then go to look at the -- so, in a nutshell,
18 could you state your opinion on the materiality of the
19 August 7th tweets on August 7?

20 A. Again, the August 7th tweets based on all the information
21 I've shown you from analysts -- internal documents, price
22 factors, volume factors, implied volatility, the convertible
23 bonds -- all suggest that the tweets are material.

24 Q. And that's the first tweet, the "funding secured" tweet?

25 A. The -- well, with respect to the "funding secured" tweet,

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1 from a statistical standpoint, I have not -- it's almost
2 impossible to separate the effects. I mean, those words
3 were -- were printed together, I believe were considered to be
4 a statement.

5 You know, it's eight words and one number, but it -- you
6 know, it's obviously for the jury to decide, but there is
7 substantial qualitative evidence which would suggest that the
8 "funding secured" is material to the market.

9 Q. All right. And your conclusion on materiality also
10 concerns the "investor support is confirmed" tweet?

11 A. Yes. That also is discussed. And, again, when it's
12 discussed in this qualitative information, it suggests it's
13 information that is important to the mix of information
14 investors act on.

15 Q. Okay. And then the third topic was to look at the impact
16 of those tweets and the connection with that and the stock
17 price movements in the rest of the class period through
18 August 17th; is that correct?

19 A. Yes. To see if they are linked and that the losses can be
20 considered to be related to the tweets.

21 Q. Okay. And what's your conclusion in that regard?

22 A. That the tweets caused losses to investors over the
23 post -- over what I call the corrective period from August 7th
24 to August 17th.

25 Q. Okay. And did you do the same qualitative and

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1 quantitative analysis for the remainder of that class period to
2 August 17th?

3 **A.** Yes. I literally went minute-by-minute, day-to-day to
4 evaluate the movements over the period from August 7th to
5 August 17th.

6 **Q.** All right. And we'll spare the jury the entire
7 minute-by-minute, blow-by-blow description.

8 **MR. PORRITT:** If we could show the witness Slide 48,
9 which is going forward a day.

10 (Document displayed.)

11 **BY MR. PORRITT:**

12 **Q.** This is something you prepared for on August 8th; is that
13 correct?

14 **A.** Yes. This is -- this is August 8th intraday price and
15 volume. And we'll start here on the list. As counsel
16 suggested, I'm not going to do every day, but it's interesting
17 to see how the market reacts.

18 In this particular case, there are three issues that
19 really I think are -- I would, you know, think you should take
20 away.

21 **Q.** Okay. And what are those three issues?

22 **A.** Issue one is that you can see before the market opened,
23 the Tesla Investor Relations put out a board statement, and
24 that -- and there was an increase, apparent increase, in the
25 stock.

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1 At 10:10 the stock peaked. It's not clear exactly, but it
2 appears that the SEC began and it was announced were probing
3 Tesla. There was an announcement in the *New York Times* at
4 10:24 a.m. And then you can see the stock sort of -- well,
5 just sort of meandering downward over the rest of the day to
6 close at 370.34.

7 And which really sort of points out the third issue.
8 You've got the board, you've got the SEC, and now you've got
9 uncertainty. You've got an absence of information. There was
10 no clarification. The board statement did not confirm anything
11 related to the "funding secured" or the "investor support
12 confirmed."

13 **Q.** Okay. And was there any other information coming from
14 either Tesla or Elon Musk on this day regarding funding or
15 investor support?

16 **A.** I do not believe so.

17 **Q.** And was the SEC investigation that was mentioned in the
18 *New York Times*, was it also discussed by other analysts and
19 media?

20 **A.** Yes. That -- obviously, again, this is something that is
21 material. It's important to investors if there is a Government
22 investigation that has begun, and so I think I've got some
23 discussion.

24 **MR. PORRITT:** If you could show Slide 7, please,
25 Derek.

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1 (Document displayed.)

2 **A.** Yes. This is a *MarketWatch* article. And we don't have
3 to read this -- read the whole thing, but it basically says
4 (as read):

5 "Securities regulators have inquired with Tesla, Inc.
6 about chief executive Elon Musk's surprise announcement
7 that he may take the company private and whether his claim
8 was factual, people familiar with the matter said."

9 **MR. PORRITT:** All right. And maybe if we could show
10 Slide 6 to finish off this point.

11 (Document displayed.)

12 **A.** This is a *Business Insider* article on August 8th. Really
13 there's, I'll say, a yin and yang component to it.

14 First it said (as read):

15 "Analysts are taking Musk at his word that he has
16 indeed secured funding and has investor support."

17 That's one part, but then on the bottom he has (as read):

18 "He could face serious legal consequences if he wasn't
19 entirely truthful."

20 And I point that out because of the word "consequences."
21 The -- one of the areas that it's my opinion the investors were
22 harmed as the price moved over the period of August 7th to 17th
23 was associated with consequential harm; the consequences of
24 Tweeting -- okay? -- this information. And in this case the
25 consequential harm is related to legal.

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1 In the prior slide, the discussion was associated with
2 Government regulation, meaning the SEC.

3 These are the types of information which will drive down a
4 price of the stock.

5 **BY MR. PORRITT:**

6 **Q.** Are there other sorts of consequential harm that you might
7 observe in circumstances like this?

8 **A.** Yes. In this particular case, for example, over time it
9 became revealed that there was a lack of internal controls;
10 that the corporate governance structure wasn't, you know,
11 strong enough to control the tweeting.

12 And then there is a very important component, which is
13 this credibility of the company. I mean, you've got -- you
14 know, it's -- trusting the management of a company is critical;
15 and if there's credibility issues, that also can lead to a
16 decline in the stock price.

17 **Q.** Okay. And is there economic literature about the effect
18 of some of these consequences on a company's stock price?

19 **A.** Yeah. There's extensive economic literature associated
20 especially with things like, what is called in the economics
21 literature, reputational effects.

22 **Q.** Okay. And how do these reputational effects actually
23 affect investors in a company like Tesla?

24 **A.** They would harm the investor because what can happen is
25 you can have, I don't know, one-dollar change in some economic

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1 variable, but a greater than one-dollar change in the value of
2 the stock because the reputation has been harmed.

3 **Q.** And is that a loss to the investors as a result?

4 **A.** Well, that's -- that's money out of their pocket.

5 **MR. PORRITT:** If we can return to Slide 26.

6 (Document displayed.)

7 **BY MR. PORRITT**

8 **Q.** Did you prepare this slide?

9 **A.** Yes.

10 **Q.** And what does this show in connection with August 7th
11 through 8th?

12 **A.** Well, yeah. And I apologize in advance to the jury, but I
13 go back to this -- I'm going to go back to this throughout
14 our -- my testimony here.

15 But you can see here what -- what was happening between
16 the price and the implied volatility. Now, the implied
17 volatility, it's my opinion, is really a proxy, a
18 representative proxy of the sentiment in the market as it
19 relates to the deal.

20 We know that when the going-private transaction was
21 announced, we saw this precipitous decline in long-term
22 volatility, and so it's representative of the sentiment there.

23 And you can see that, you know, again, when there is the
24 increase in price and the tweet, the implied volatility goes
25 from 50.52 percent to 32.57 percent.

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1 And what happens on the 8th? Well, again, there's no new
2 information, really no new information other than the SEC.
3 There's uncertainty. There's confusion. There's market
4 disruption. And the price is going down from 379 to 370.

5 And then you see the implied volatility going up from 32
6 to 37. And understand that the implied volatility is what's
7 called inversely related, inversely related to the likelihood
8 of the deal getting done.

9 So this is basically saying on the 8th, you know, maybe
10 there was some more -- there was a little bit of question
11 whether the deal would get done, but it was still far below the
12 50.52 percent on pre-tweet.

13 **Q.** And then looking forward to the rest of the week,
14 August 9th, August 10th, do you recall -- or can you testify to
15 what you saw there in terms of what's happening with the price,
16 the volatility, and media reports?

17 **A.** Really not much.

18 **MR. PORRITT:** If we could show perhaps Slide No. 5.

19 (Document displayed.)

20 **BY MR. PORRITT**

21 **Q.** Is this an article that you saw on August 9th?

22 **A.** Yes.

23 **Q.** Okay. And is this something that you considered as part
24 of your report?

25 **A.** Yes.

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1 **Q.** Okay. And what does it tell you as an economist?

2 **A.** Well, the first sentence in some sense tells you maybe the
3 possibility as to why the price might be going down (as read):

4 "Doubts about Elon Musk's ability to take Tesla
5 private mounted across Wall Street on Thursday, driving
6 the stock down as much as 4 percent."

7 And then down in the last paragraph it says (as read):

8 "Since that initial tweet, though, he has offered no
9 evidence to back up the statement. Nor has anyone stepped
10 forward publicly -- or privately -- to say they are behind
11 the plan."

12 And then this last sentence is very interesting (as read):

13 "People with or close to 15 financial institutions and
14 technology firms who spoke on a condition of anonymity
15 says they weren't aware of financing having been locked in
16 before the Musk tweet."

17 In essence, again, this suggests these 15 major financial
18 institutions find this to be important information.

19 **MR. PORRITT:** And if we could show Slide 30.

20 I apologize to the jury. We're trying to move quickly
21 here. There's a lot of material to cover.

22 (Document displayed.)

23 **BY MR. PORRITT:**

24 **Q.** Again, is this a chart that you prepared?

25 **A.** Yes.

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1 Q. And is it sort of a carry-on from the one we were just
2 looking at through to August 8th?

3 A. Yes. And it's sort of unfolding the story in some sense
4 or the situation associated with the tweets. You can see the
5 price going down through August 9th and then, you know, a
6 slight increase along with a slight increase in the probability
7 of the deal.

8 And, remember, the increase in the probability is
9 associated with a decrease in implied volatility, but generally
10 it's -- it's fairly flat.

11 Q. Now, this slide shows that Tesla's stock price on
12 August 9th and August 10th was below its level of \$356 where it
13 was before the August 7th tweets.

14 A. Yes, it does.

15 Q. Does that mean that the August 7th tweets were no longer
16 impacting Tesla stock price at this time?

17 A. No.

18 Q. And why not?

19 A. Well, again, as I showed before on August 8th, at least
20 the SEC announcement of an investigation had come about. There
21 was discussion of legal recourse. There were issues associated
22 with, you know, the credibility of management that were
23 emerging and uncertainty. And so it's my opinion that a
24 portion of the decline from 379 to 355 is a consequence of the
25 tweets, not directly related to the tweets, and I -- I call it

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1 consequential harm.

2 **Q.** And the implied volatility number has gone up from where
3 it was on August 8th at 32 percent; isn't that correct?

4 **A.** Yes. It's gone up, but it's still -- you know, it's about
5 halfway between where it went down to and where it was
6 pre-tweet.

7 **Q.** If we can go forward to August 11th and 12th, is that
8 something you looked at as well?

9 **A.** Yes.

10 **Q.** And did you look at price and implied volatility for
11 August 11th and 12th?

12 **A.** No.

13 **Q.** Why is that?

14 **A.** Because August 11th and 12th turned out to be Saturday and
15 Sunday. So the markets are closed on Saturday and Sunday.
16 There were -- so there's no market activity data.

17 But I did find, I think as representative examples, two
18 stories that I think in some sense are representative of this
19 period.

20 **Q.** And were these the only two stories published about the
21 Tesla going-private transaction over this weekend?

22 **A.** No. No.

23 **Q.** Okay. Were there many others?

24 **A.** Yes. Yes, I believe so.

25 **MR. PORRITT:** All right. Derek, if we can bring up

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1 side by side Slides 61 and 62.

2 (Documents displayed.)

3 **A.** Well, you can see in this first slide August 11th, 2018,
4 that's Saturday. And Saturday Reuters is basically saying that
5 the (as read):

6 "Saudi Arabia's PIF has shown no interest in
7 bankrolling Tesla buyout."

8 So this is -- this is basically suggesting, again, that
9 the PIF is -- is -- has no interest.

10 And, again, this is -- this is rumor. This is innuendo.
11 This is speculation, but, interestingly enough, on Sunday,
12 August 12th, you see the report that (as read):

13 "Saudi Arabia is looking to invest big in Tesla as the
14 company teases going private."

15 So, again, what you're seeing is the speculation, rumor,
16 driving this market as opposed to real information.

17 **BY MR. PORRITT**

18 **Q.** Okay. And what's the effect on Tesla's stock price at
19 this type of reporting?

20 **A.** Well, again, uncertainty is the kryptonite of investors,
21 and investors don't like uncertainty. Professor Heston
22 discussed that's why they hedge with options.

23 But, yeah, it would have, again, a negative -- as this
24 went drip, drip, drip over time, it would have a negative
25 impact on the stock.

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1 Q. And moving forward to Monday, August 13th, was there any
2 more news development in connection with the going-private
3 transaction on August 13th?

4 A. Well, there -- yes. There -- actually, there was
5 communication from Tesla via a blog post.

6 Q. Okay. Was this the first public statement by Tesla or
7 Elon Musk since August 7th?

8 A. Well, there was the board memo on August 8th before the
9 open was from Tesla; but in terms of related -- that didn't
10 really discuss funding or investor support. And this is the
11 first communication from sort of the horse's mouth since that.

12 Q. Okay. And in general terms, what did that blog post --
13 what topics did that blog post discuss?

14 A. My recollection is that there was a discussion about
15 Saudis that -- the discussion that Mr. Musk and Tesla had had
16 with respect to the Saudis, but there was also a very specific
17 statement that 66 percent of the shareholders would go into the
18 new company, suggesting that investor support was confirmed.

19 Q. Okay. And did analysts react to this August 13th blog
20 post?

21 A. Yes, they did.

22 Q. All right.

23 MR. PORRITT: If we could show Dr. Hartzmark the Slide
24 4, please.

25 (Document displayed.)

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1 BY MR. PORRITT:

2 Q. Is this one of the analyst reports you reviewed?

3 A. Yes. Yes.

4 Q. And why is this important to you?

5 A. It's important to me because, again, I'm looking at the
6 market and the market price and then, again, how that
7 corresponds to the qualitative information, and right here it
8 says that (as read):

9 "The blog also" -- this is in the last line. "The
10 blog also explains how the deal could be more likely than
11 we previously thought."

12 So at least for this analyst, the suggestion that came out
13 of the blog post was that it was actually more likely.

14 MR. PORRITT: And then if we can show the witness
15 Slide 59.

16 (Document displayed.)

17 BY MR. PORRITT

18 Q. Is this another analyst report you reviewed on
19 August 13th, 2018?

20 MR. PORRITT: Slide 59. Sorry.

21 (Document displayed.)

22 A. Yes. This is -- this is *Morningstar*, an analyst report,
23 on August 13th as well after the blog post, and it reads that
24 (as read):

25 "Tesla CEO Elon Musk issued a blog post August 13th

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1 that states he is still gauging shareholder interest in
2 Tesla going private at \$420 a share, but our impression of
3 his words is that he thinks it can happen, and we agree."

4 And then down at the bottom of this, maybe highlight down
5 in the first column (as read):

6 "Musk in an August 7th tweet said, 'Investor support
7 is confirmed. Only reason why this is not certain is that
8 it's contingent on a shareholder vote.'"

9 And then according to *Morningstar* (as read):

10 "We think this statement means Musk believes he has
11 enough votes to go private. Musk also said in the
12 August 13th blog post that he estimates about two-thirds
13 of the shareholders would go private."

14 **BY MR. PORRITT:**

15 **Q.** So what did this analyst report lead you to -- you know,
16 what inference did you draw from this blog post -- from this
17 analyst report?

18 **A.** Well, that the blog post, at least as it related to
19 investor support confirmed, you know, was confirmatory; and,
20 you know, the other one was more associated with the "funding
21 secured."

22 **Q.** All right.

23 **MR. PORRITT:** And if we could show the witness
24 Slide 32.

25 (Document displayed.)

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1 BY MR. PORRITT

2 Q. Again, starting to get familiar. What's happening now on
3 August 13th with these two lines?

4 A. Yeah, it's interesting as well. On August 13th, you know,
5 given the blog post, it seems as if those two articles are
6 representative of the data. This is the data. The data shows
7 that the implied volatility goes down, which says that the
8 market sentiment is more -- more feeling like this is going to
9 happen, and the price goes up slightly.

10 At the same time I don't want to go too -- get too much
11 into it because it really is sort of wavering. There's -- you
12 know, these are not very large movements.

13 Q. Okay. Based on your review, did everyone interpret the
14 August 13th blog post as confirming the August 7th tweets?

15 A. No. I mean, the nature of markets is that there are
16 differences of opinion. So -- but, again, the data tells you
17 what the consensus is thinking.

18 Q. And what does the data show about the consensus?

19 A. Again, in this particular slide it shows that the
20 sentiment has increased of the likelihood of the deal.

21 Q. All right. And moving forward from August 13th -- again
22 we're playing out the week now, 14th, 15th -- what did you see
23 there in terms of the qualitative review that you were doing?

24 A. Again, an absence of information. And I think it's that
25 the -- the uncertainty and the drip, drip, drip day after day

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1 of very little information is -- is potentially weighing on the
2 market.

3 And I think I have a slide that in some sense summarizes
4 this issue.

5 **MR. PORRITT:** If we could show the witness Slide 74.

6 (Document displayed.)

7 **BY MR. PORRITT**

8 **Q.** This is the JPMorgan, Exhibit 17.

9 **A.** Yeah. This is a slide from August 14th, 2018. And you'll
10 remember JPMorgan analyst Ryan Brinkman had increased his price
11 target, had basically considered that the Tesla -- that the
12 tweets were a declarative statement by the CEO; and so if
13 "funding secured," it's secured.

14 So the issue that he has here (as read):

15 "We significantly raised our price target based upon
16 the assertions of the fact from Tesla CEO Elon Musk that
17 funding is secured. And that the only reason why this is
18 not certain is that it's contingent on shareholder vote."

19 So that was -- that was the basis of his price target of
20 that.

21 And then if you go all the way to the bottom, now we're on
22 August 14th, which is -- what? -- six days later, four trading
23 days later, and he's saying (as read):

24 "We're not sure what to believe."

25 **Q.** Then moving forward to August 16th, 17th, did you look at

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1 the price movements on those days?

2 **A.** Yes, I did.

3 **MR. PORRITT:** All right. If we could show Slide 51.

4 (Document displayed.)

5 **BY MR. PORRITT**

6 **Q.** Is this a chart that you prepared?

7 **A.** Yes.

8 **Q.** And what does it show?

9 **A.** What it does show is by the 16th, the price, again, had
10 meandered down to 38.69 -- you can see that on the left side of
11 the screen -- and then basically was almost flat on
12 August 16th.

13 At 11:22 p.m. on August 16th, an interview with Mr. Musk
14 that was published by the *New York Times* was issued. And this
15 is after the market closes, so it doesn't incorporate any --
16 the price movements on the 16th, even though I have it on the
17 side of the 16th. It's associated, though, with an open
18 that -- where -- and, again, this is quintessential efficient
19 market, where the price spikes downward with substantial volume
20 approximately about \$30, \$30 a share.

21 **MR. PORRITT:** And if I can show you Exhibit 171. Just
22 the first page please, Derek.

23 (Document displayed.)

24 **BY MR. PORRITT**

25 **Q.** Is this -- is this the *New York Times* article that you

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1 were referring to?

2 **A.** Yes. This is the *New York Times* article that was
3 published on -- you can see on August 16th, 2018, before the
4 market opened on August 17th.

5 **Q.** And what did this article say?

6 **A.** Well, it says -- it says a lot. I mean, you know, it
7 basically said -- first of all, Mr. Musk, this is from the
8 horse's mouth, provided a detailed timeline -- a detailed
9 timeline for the Twitter postings. It says there again (as
10 read):

11 "He asserted that he had" -- quote -- "funding secured
12 for such a deal."

13 But it also sort of -- I don't know how it -- you know,
14 whatever it means, but to me, as an investor and an economist,
15 so he's typing this on the way to the airport. You know,
16 investors and analysts and journalists were puzzled over the
17 tweet, even though Tesla stock soared.

18 It says here as well the 420 might have been code for some
19 marijuana counterculture, which is sort of bizarre. Yeah.
20 He's going, it seemed like better karma for 420, which is an
21 interesting statement.

22 There's also, I believe, information here that
23 suggested -- oh, up above the -- in the -- the Tesla shares
24 soared, it said he acknowledged Thursday that no one had seen
25 or reviewed the tweets before he posted it, so there was no

1 board review, suggests a weakness or lacks of corporate
2 governance.

3 So there were a lot of, I'd say, yeah, related issues that
4 are linked to the tweets in this article.

5 **Q.** And what else did the article say about funding in regard
6 to the reference here on the first page?

7 **A.** On the next page there's a discussion of funding. What
8 Mr. Musk meant by "funding secured" has become an important
9 question, and it's obviously an important question in this
10 courtroom, but -- according to the article, but that funding,
11 it turned out, was far from secure.

12 **Q.** Okay. And why was the impact of this newspaper article on
13 the stock price on August 17th important, in your opinion?

14 **A.** It's really sort of the final revelation of the truth
15 related to the fact that funding is not secured. And I believe
16 that's how the market reacted, and there's both qualitative and
17 quantitative data to support that.

18 **Q.** All right. And what's the qualitative data? Is that
19 something we've already looked at?

20 **A.** Well, the qualitative data is a decline of approximately
21 \$30, which is, again, through my event study and regression and
22 scientific procedures, is statistically significant.

23 **Q.** And what's the qualitative data that you were referring
24 to?

25 **A.** Well, there are a number of articles, analyst reports and

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1 such. I'd like to -- I think there's one that, out of --

2 **MR. PORRITT:** If we can show again the JPMorgan
3 Exhibit 23 already admitted.

4 (Document displayed.)

5 **A.** This is, again, Mr. Brinkman at JPMorgan, and, again, a
6 prestigious commercial bank. And if you go to the middle in
7 bold face (as read):

8 "Our interpretation of subsequent events leads us to
9 believe that funding was not secured for the going-private
10 transaction, nor was there any formal proposal."
11 Lower down he's sort of trying to explain what he had done
12 back on August 8th (as read):

13 "We'd imagined following the surprise August 7th
14 announcement that another party (e.g., the Saudi fund) had
15 already firmly decided (including having completed any
16 internal review process) to fund a going-private
17 transaction. The revelation the Saudi fund is
18 subsequently asking Tesla for details of how the company
19 would be taken private suggests to us that any deal is
20 potentially far from being formally proposed, which is
21 different from our understanding on August 8th which was
22 based on Mr. Musk's statement on Twitter. Only response
23 why this is not certain is that it's contingent on a
24 shareholder vote."

25 So you can see there, this is Mr. Brinkman's words, and

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1 the result of that -- you can go up to the stop -- is that he's
2 reverting the value of the Tesla shares, and you can see there
3 "PT back to 195."

4 As I mentioned before, price targets are very important
5 and, indeed, in this particular case he took it down from 308,
6 you can see over on the side, to 195.

7 **Q.** All right. Isn't it possible Mr. Brinkman was amending
8 his price target in response to the August 13th blog post,
9 which provides some of the details covered in this analyst
10 report?

11 **A.** It's unlikely because we saw that he had a presentation on
12 August 14th.

13 **Q.** And did that presentation reduce his price target?

14 **A.** No.

15 **Q.** Now, if we could just show you -- we've been talking a lot
16 about the tweets.

17 **MR. PORRITT:** If we look at Exhibit 8, which is one of
18 the tweets. That's the one we're all getting very familiar
19 with.

20 (Document displayed.)

21 **BY MR. PORRITT:**

22 **Q.** You're familiar with this tweet, Dr. Hartzmark?

23 **A.** Yes. It was on the first slide of the testimony.

24 **Q.** In conducting your analysis of loss causation and the
25 impact in stock price, how did you approach the two sentences

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1 in this one tweet?

2 **A.** Yeah. Again, eight words and one number. To me, it was
3 an interwoven bundle. I, as an economist, look at this as, you
4 know, that the "funding secured" colors the rest of it. It's
5 to be taken together, and I think it would be very difficult to
6 sort of separate the quantitative effects of this.

7 And so, yes, I'm treating this as an interwoven bundle.

8 **Q.** What about the second tweet?

9 **MR. PORRITT:** If we can pull up Exhibit 13.

10 (Document displayed.)

11 **BY MR. PORRITT**

12 **Q.** How did you treat this in connection with the prior tweet,
13 Exhibit 8?

14 **A.** Yeah, I've treated them all together. It's 27 words and
15 one number. And it -- again, to separate this, I think, would
16 be difficult. The -- you know, I don't know whether the -- I
17 believe they were meant to be read together. They certainly,
18 within -- you know, they were within a very short time period
19 together.

20 And so, again, from an economic standpoint or from a
21 quantitative standpoint -- I'm sorry, from a quantitative
22 standpoint from statistics, I treated this as an interwoven
23 bundle.

24 **Q.** What about qualitatively? Were you able to look at these
25 tweets?

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1 **A.** Well, qualitatively, you know, it's going to be the jury,
2 I believe, that decides; but, you know, as I've gone through
3 and looked at these dates, looked at the movements in implied
4 volatility and prices, it would suggest that, you know, that
5 "investor support confirmed" and "funding secured" are very
6 important pieces of information.

7 And, again, the reason is that we see that the investors
8 were interested in it. That's the quintessential definition
9 for economic materiality.

10 **Q.** And we talked about implied volatility. Do you recall
11 what the implied volatility did following the August 16th *New*
12 *York Times* article?

13 **A.** It returned pretty close to its pre-tweet level.

14 **MR. PORRITT:** If we could show the witness Slide 45.

15 (Document displayed.)

16 **BY MR. PORRITT**

17 **Q.** Is this a chart you prepared?

18 **A.** Yes.

19 **Q.** And what does this show?

20 **A.** This is the January 2020 contract maturity date. This is
21 the contract, and it shows the implied volatility. It's using
22 the data from Professor Heston's calculations.

23 And you can see the -- the movement from pre-tweet where
24 it's approximately 50 percent, you see the tweet with the
25 decline. And then the slow, as information is sort of leaked

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1 out, as consequential harm is incurred, the implied volatility
2 goes back to the -- close to the pre-tweet level.

3 **Q.** And that's immediately after the *New York Times* article?

4 **A.** Yes. You can -- the -- it's -- the incline there is -- is
5 the movement from the 16th to the end of the 17th.

6 **Q.** And did you see this pattern for other long-term Tesla
7 stock options?

8 **A.** Yes. And, indeed, this is -- you know, for me it was
9 exciting because it's more of the efficiency situation. All of
10 these options were responding in a very similar manner, and
11 they -- you just -- you see the pattern.

12 **MR. PORRITT:** If we could show Slide 42.

13 (Document displayed.)

14 **BY MR. PORRITT**

15 **Q.** This is one you prepared?

16 **A.** Yes.

17 **Q.** And that shows what you've just been talking about?

18 **A.** Yes. I mean, you can see that -- that -- you know, it's
19 not -- you know, these are not, you know, perfect, but
20 something that probably comes as close to the August 16th,
21 2019, starts at 50, ends at 50. You know, you see these
22 particular slides -- or implied volatility, you know, moving in
23 concert.

24 **MR. PORRITT:** And if we can return to Slide 46.

25 (Document displayed.)

1 BY MR. PORRITT:

2 Q. If you could wrap up. Based on all your review and
3 analysis of all these articles that we've been looking at and
4 all this data, and I understand this is just the tip of the
5 iceberg of everything you've looked at, what is your opinion
6 regarding the effect of the August 7th tweets on Tesla
7 securities during this class period?

8 A. Well, that the August 7th tweets are linked to the -- the
9 news that is disclosed and the consequential harm that is
10 implicated on investors during this post-tweet corrective
11 period.

12 Q. Okay. And did you look to see if there was any other
13 explanation for the decline in Tesla stock price from
14 August 7th through to August 17th?

15 A. Well, yes. The -- the first thing I had mentioned to the
16 jury is I did do a daily -- I did an event study, and I was
17 able to adjust and exclude outside influences from the market
18 and the industry, but that left remaining the question of
19 whether there was any other Tesla information unrelated to the
20 tweets that might have caused some of the decline.

21 Q. Okay. And what -- did you see anything?

22 A. No. I literally did a minute-by-minute, story-by-story
23 analysis. I believe I had 14 topics, 14 out of 2400 news
24 stories, that were related to Tesla that, you know, could be
25 considered meaningful information.

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1 And either the -- the -- what followed was not a
2 statistically significant decline in the price or the price,
3 you know, came back, or, more critically, the news was old
4 numbers. It had been previously disclosed so it was not news.
5 It had already been incorporated in the market price.

6 And so there was no other, what is called, confounding
7 information, so I concluded that 66.67 was the amount caused by
8 the Tesla tweets, the loss caused by the Tesla tweets.

9 Q. All right. And that 66.67 is the entire firm-specific,
10 Tesla-specific decline over this class period; correct?

11 A. Yes.

12 Q. All right. Do you have an opinion whether you could
13 measure the harm suffered by Tesla investors during -- during
14 the class period?

15 A. Yes.

16 Q. Okay. And what is the -- what is your opinion?

17 A. My opinion is that they suffered \$66.67 of harm.

18 Q. And how did you come to that opinion?

19 A. Again, through the analysis that I did, but I also
20 utilized, as I mentioned, this event study analysis to
21 calculate that amount.

22 Q. Okay. And is another word for the \$66.67 impact
23 artificial inflation?

24 A. Yes. I mean, basically what it suggests is that the price
25 was distorted. It was artificial. And so that means that the

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1 information drove it away from what economists would call a
2 but-for price or a true price.

3 **Q.** Okay. Did that level of inflation remain constant
4 throughout the class period?

5 **A.** No. It would change as truth is revealed. It would
6 change as -- consequential harm is changes that are revelations
7 associated with the SEC, legal consequences, and all the others
8 that I've discussed.

9 **Q.** And how much did you find that Tesla stock price was
10 artificially inflated during each day of the class period?

11 **A.** How much did I find?

12 **Q.** Yes.

13 **A.** Well, it varies each day.

14 **MR. PORRITT:** If we can show the witness Slide 52,
15 please.

16 (Document displayed.)

17 **BY MR. PORRITT:**

18 **Q.** Is this something you prepared?

19 **A.** Yes.

20 **Q.** And if you just explain what is represented on Slide 52?

21 **A.** Yeah. First of all, slide -- this slide shows the price
22 of the Tesla stock over the -- this corrective period from 379
23 down. As information is leaked, down to 305.50.

24 And you can see that on 8/7 the amount of inflation is
25 66.67. As the inflation is removed from the stock price, the

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1 stock price moves down. So on August 8th it's 57.54. Right
2 before the *New York Times* article it's 22.55 on August 16th.
3 And then goes and is completely removed as of August 17th,
4 2018.

5 Q. So how much is the inflation on August 17th, 2018?

6 A. August 17th?

7 Q. Yes.

8 A. Zero.

9 Q. Okay. And what about on August 6th or before August 7th
10 before the tweet, what's the --

11 A. Zero.

12 Q. Thank you.

13 And how do you start to calculate these measure of
14 damages?

15 A. Well, as I mentioned before, the distortion or the
16 artificiality is based on the actual price less what is called
17 a but-for or true price.

18 And so what I did was calculate a true price for Tesla, if
19 one took into account the impact of the tweets and the harm
20 that was incurred by investors over the corrective period here
21 from August 7th to 17th.

22 Q. And in calculating this inflation, did you also take into
23 account changes as a result to market effects?

24 A. Yes.

25 Q. And how did you go about doing that?

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1 **A.** In calculating the but-for price, that adjusts and
2 accounts for market and industry effects. And, as I mentioned
3 before, I also looked at Tesla-specific effects that are
4 unrelated to the tweets.

5 **Q.** Okay. And is this part of your regression analysis and
6 event study?

7 **A.** Yes.

8 **Q.** Okay.

9 **MR. PORRITT:** If we could show Slide 19.

10 (Document displayed.)

11 **A.** This slide shows how you go about -- sorry.

12 **MR. ROSSMAN:** Objection, Your Honor. I don't think
13 there's a question pending.

14 **BY MR. PORRITT**

15 **Q.** Did you prepare this table?

16 **THE COURT:** Okay. Hold on. Never mind. Ask the
17 question.

18 **BY MR. PORRITT**

19 **Q.** Did you prepare this table? Are you all right,
20 Dr. Hartzmark?

21 **A.** Yes. Sorry. I just got a cramp in my legs behind the
22 chair.

23 Yes, I prepared this slide.

24 **Q.** What does it show?

25 **A.** Well, this shows how I calculated the but-for price. And

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1 the way that you did it, as I mentioned, I ran this regression
2 and the regression looks at the return of Tesla, which is in
3 the center column under "Return." So, for example, on 8/8 the
4 return is 2 -- minus 2.43. Removing the industry and market
5 effects, the abnormal return or Tesla-specific return is minus
6 2.36.

7 Okay. And so you can see I go from 379.57. Use the
8 abnormal return. And the adjusted price, which is the price
9 accounting for market and industry effects, is 370.60 as
10 opposed to the actual price of 370.34.

11 I do that every day. You can see how it moves. And at
12 the -- at the last day on August 17th, the adjusted price is
13 312.90. That's the but-for price after the -- all the
14 information is revealed about the truth about the tweets and it
15 also incorporates the harm that was caused -- that is a
16 consequence of the tweets.

17 **Q.** And is it fair to say that 312.90 excludes any decline due
18 to market effects during that period?

19 **A.** Yes, market and industry effects.

20 **Q.** Okay. And that would be shown in the 305.50; is that
21 correct?

22 **A.** Yes. You can see the market went down approximately \$75.
23 The adjusted price went down approximately \$67.

24 **Q.** Okay. And then -- how then is this but-for price of
25 312.90 used to calculate harm to investors for damages?

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1 **A.** Yeah, as I mentioned, this is the price, you know, but-for
2 the tweets and it, as I said, incorporates both the direct and
3 the impact of the consequential harm. And you would look at
4 this relative to the actual price to get the level of
5 inflation.

6 **Q.** All right.

7 **MR. PORRITT:** And if I could show the witness
8 Slide 11?

9 (Document displayed.)

10 **A.** This slide shows just that calculation. So you can see
11 that, for example, the but-for price is the price, you know,
12 but-for the tweet. The price would have been 312 -- I'm sorry,
13 because of the tweet, it's 312.90.

14 And let's take August 10th. The actual price of the stock
15 is 355.49. But-for price is 312.90. And you can see that the
16 artificial inflation is \$42.59. So it's just basic
17 subtraction.

18 **MR. PORRITT:** Okay. And if we can go back to
19 Slide 52, which I believe is the same numbers, but in the graph
20 form.

21 There we go, Slide 52.

22 (Document displayed.)

23 **BY MR. PORRITT**

24 **Q.** Can you explain for the jury what that means? What these
25 inflation figures mean for an investor that bought, say, on

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1 August 7th at \$379.57?

2 **A.** Yeah. It would mean someone who bought there because of
3 the tweets and held it through the whole period, through 8/17
4 or sometime thereafter, lost 66.67 in harm unrelated to the
5 market.

6 **Q.** And what if they sold on, say, August 15th at 338.69 when
7 the inflation is 25.79?

8 **A.** Well, on that date inflation is 25.79 so you -- you have
9 overpaid when you -- when you buy it by 66.67, but you're
10 overcompensated when you sell by 25.79. So the difference
11 would be the harm. And we'll talk about that in just a little
12 bit.

13 **Q.** So the 312.90 price is lower than Tesla's stock price
14 before the August 7th tweet when it was \$356.85.

15 How can the but-for price be lower than the price before
16 the first "funding secured" tweet?

17 **A.** Again, the but-for price incorporates the harm that was
18 imposed on investors because of circumstances that should have
19 or could have been foreseeable. Again, such as the SEC, legal
20 consequences, the damage to credibility, and the other issues
21 that I've discussed so far.

22 **Q.** And is there a way to measure and separate that harm, what
23 you call the consequential harm, and the direct inflation
24 caused immediately by the tweet?

25 **A.** Yes.

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1 **Q.** And how did you go about doing that?

2 **A.** Actually, I was able to do it using the information that
3 Professor Heston had -- had shown. As he discussed before, the
4 implied volatilities change because of takeover, you know,
5 management buy-outs, corporate transactions. And so I was able
6 to use the movements of the implied volatility over this
7 corrective period to separate out the -- what I would call the
8 direct effects or the direct inflation from the consequential
9 inflation.

10 **MR. PORRITT:** And going back to Slide 45.

11 (Document displayed.)

12 **BY MR. PORRITT**

13 **Q.** You used this implied volatility to generate the scalar,
14 you called it?

15 **A.** Yes. I mean, you can see that after the tweet, when
16 you're at the 33, that would be when there is \$23.27 associated
17 with the -- associated with the probability of the deal
18 closing, because we know that at that point there's the full
19 effect.

20 And then as this meanders back to the original amount, you
21 can -- you can, in essence, scale that 23.27 and come up with a
22 number every day that's associated with the direct inflation.

23 **Q.** All right. And did you prepare a chart showing the direct
24 and consequential inflation for each day of the class period?

25 **A.** Yes, I did.

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1 **MR. PORRITT:** And if we could show Slide 22, please.

2 (Document displayed.)

3 **BY MR. PORRITT**

4 **Q.** Is this the table that you prepared for that?

5 **A.** Yes.

6 **Q.** And, again, could you just quickly describe what it shows?

7 **A.** Okay. The artificial inflation you've seen before in the
8 second column after the date. This scalar is a function of the
9 change in the implied volatility over the class period. And,
10 as I mentioned, it starts with one where we know on 8/7 that
11 the total direct artificial inflation is 23.27.

12 And then over this period you can see that the -- for
13 example, on 8/8 the direct artificial inflation went down by
14 28 percent, from 23.27 to 16.75. It falls to pretty much in
15 half by the 16th of August. And that gives you the direct
16 artificial inflation. And, therefore, you can calculate the
17 consequence artificial inflation as the difference between the
18 total and the direct artificial inflation.

19 So that, for example, on August 16th, when total inflation
20 is 22.55 and the direct inflation is 11.27, the consequential
21 inflation actually is about the same. The consequential
22 inflation, which is two-thirds of the total at the beginning,
23 is half by the end.

24 **Q.** All right.

25 **MR. PORRITT:** And if I could show Slide 55.

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1 (Document displayed.)

2 **BY MR. PORRITT**

3 **Q.** Is this the same chart but in a graphical form?

4 **A.** Yes. I mean, it just helps to see this. Again, same type
5 of situation. You can go down to August 16th, 2018 and see, as
6 I just mentioned, total inflation is 22.55 and the direct
7 inflation is in the lighter hatched area. It's 11.27.

8 Consequential 11.28. And then it goes to zero on 8/17.

9 **Q.** And you prepared this chart?

10 **A.** Yes.

11 **Q.** Okay. Why don't you look at the probability of the deal
12 closing for your scalar by looking at the market price of the
13 stock on each day during the class period?

14 **A.** Oh, well, because the market price incorporates both the
15 direct effects and the consequential effects.

16 **Q.** How does that compare to the implied volatility?

17 **A.** Well, again, we see from the implied volatility, in
18 essence, the story of the tweets. And so it -- it doesn't
19 incorporate -- you know, it doesn't separate out the direct
20 inflation from the consequential inflation.

21 **Q.** And then, finally, your final area of opinion here, do you
22 have an opinion as to how you can use these inflation figures
23 to calculate class-wide damages?

24 **A.** Yes. Class-wide damages in securities is generally done,
25 and really it's a virtual standard, it's called the

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1 out-of-pocket damages methodology. And, you know,
2 out-of-pocket actually I think is almost a misnomer, but that's
3 what it's called. I didn't make it up.

4 And the nature of the out-of-pocket damages methodology is
5 you look at the inflation at the time that an investor
6 purchases their security and the inflation at the time when
7 they sell it, and that difference represents the damages.

8 Q. So looking here, again, we talked about this. An investor
9 who bought on August 7th at 66.67, according to your
10 calculation of inflation, their damage if they sold the next
11 day would be what?

12 A. Well, the damage would be 66.67 minus 57.44. So
13 approximately \$9.

14 Q. All right. And that's a per share number?

15 A. That's a per share number, yes.

16 Q. So you would multiply that by the number of shares bought
17 and sold?

18 A. Yes. I mean, again, another 170 million. I don't
19 remember what the volume is at that date though.

20 Q. Okay. And if a purchaser with 66.67, again, held all the
21 way to August 17th, what would be their per share damage?

22 A. 66.67, because they overpaid by 66.67.

23 Q. Okay. And how about for stock options? We've heard a lot
24 about stock options this morning and into this afternoon. How
25 would you calculate damages for stock options?

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1 **A.** I'd use the same out-of-pocket methodology. That's what's
2 great about it. As I said, it's a universal standard for
3 securities cases.

4 I would look at the inflation at purchase and the
5 inflation at sale. One difference is that you'll remember that
6 we have puts and calls, so you have sellers and buyers. So you
7 might actually have deflation. So you would have deflation at
8 purchase -- or deflation at sale and deflation at purchase.

9 **Q.** Okay. And so just to be clear, how would you go about
10 calculating -- so you have to calculate a but-for price for the
11 stock options to calculate damages?

12 **A.** Well, as Professor Heston indicated, the
13 Black-Scholes-Merton model offers the most robust calculation
14 of options valuations. And so you can calculate -- in the same
15 way that I have the but-for price for the stock, I can
16 calculate the but-for price for every option.

17 **Q.** What would you do with that but-for price for each option
18 to measure damages or calculate damages?

19 **A.** I would take that and I would subtract it from the actual
20 price, which would give me the amount of inflation at the time
21 of the transaction. And I would look at the combination of
22 transactions, whether it's a buy and a sell, sell and a buy,
23 and look at how the inflation changed.

24 **Q.** Okay. Or deflation, I think, as you said?

25 **A.** Yes, or the deflation.

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1 Q. Okay. And what do you need to be able to generate the
2 but-for prices for every stock option traded in the class
3 period using the Black-Scholes-Merton method?

4 A. Well, as Professor Heston explained, you need the but-for
5 price and you need the but-for implied volatility. With those
6 two variables, you can do the calculation for all the options.

7 Q. And do you need 2400 but-for implied volatilities?

8 A. No. Because, as Professor Heston suggested, based on
9 Black-Scholes-Merton, you can look at contract maturity dates
10 as a single -- so you only need the 17 option series. Okay?
11 I'm sorry. Not option series. 17 contract maturity dates.

12 Q. All right. And in your opinion, do you have an opinion as
13 to what the but-for implied volatility should be for each of
14 the maturity dates of options that were traded during the class
15 period?

16 A. Yes.

17 Q. All right. And looking at -- are all those options
18 treated the same in terms of deciding an implied volatility?

19 A. No.

20 Q. All right. What's -- how are they treated differently?

21 A. Well, you saw from Professor Heston's chart the difference
22 between short-term options, which in some sense were unaffected
23 by the deal in the same way -- it was more affected by the
24 disruption -- and the long-term options, which were focused on
25 the deal, especially the longer term they were.

1 And so what I have suggested is that the but-for implied
2 volatility be based on different criteria for short-term
3 options, as Professor Heston defines them, versus long-term
4 options.

5 **Q.** Okay. And for long-term options, what are you proposing?

6 **A.** Well, the long-term options in the but-for world should
7 correspond with the but-for price. And the but-for price, as
8 you'll remember, is the price of 312.90 that I calculated.
9 That's the adjusted price as of 8/17/2018.

10 And so I used the same date, the 8/17/2018 implied
11 volatility as a clean measure of what the implied volatility is
12 with the consequential harm and then excluding the falsity of
13 the tweets.

14 **Q.** And what about for short-term options?

15 **A.** The short-term options are more a function of sort of
16 what's going on at the time. And so those are based on
17 Professor Heston's calculations of implied volatility each day
18 for each contract maturity date.

19 **Q.** And did you prepare a chart showing out all the but-for
20 implied volatilities that you think should be used to calculate
21 but-for prices for stock options during the class period?

22 **A.** I did.

23 **MR. PORRITT:** All right. If we can show the witness
24 Slide 24, please.

25 (Document displayed.)

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1 BY MR. PORRITT:

2 Q. It's a lot of numbers, but is this what this represents?

3 A. Yes.

4 Q. And could you just choose a couple of examples just to
5 demonstrate the difference between long and short-term options
6 you were talking about?

7 A. Yes. You can see between the September 2018 and the
8 October 2018 options, there's a line that goes all the way
9 across. That's the delineation between short and long term.

10 You can also see that below that line, as you go, say, the
11 October 19, 2018, the implied volatility that I consider to be
12 the but-for implied volatility is 57.54 percent. And it's the
13 same for each day throughout the class period.

14 So it's basically an implied price, an implied but-for
15 price -- I'm sorry, a but-for price of 312.90 and the implied
16 volatility a constant 57.54 through -- for all those dates.

17 If you go above the line, you can see that it varies
18 day-to-day. And so that those are associated with the actual
19 volatilities as Professor Heston has calculated them.

20 Q. All right. And what about damages for convertible bonds?
21 Did you look at that?

22 A. Well, the damages for convertible bonds was -- was
23 calculated in exactly the same approach as I used for the
24 stock.

25 Q. So you would -- you calculated an amount of artificial

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1 inflation for each of the convertible bond series that was
2 traded during the class period?

3 **A.** Yes, yes. I calculated a but-for price for each bond and
4 then an amount of inflation.

5 **Q.** All right. Were these three bonds the only series -- the
6 only bonds that were traded during the class period?

7 **A.** There was a non-convertible bond. The maturity bonds are
8 all convertible into stock and there was a non-convertible
9 bond.

10 **Q.** And did you calculate any inflation for the
11 non-convertible bond?

12 **A.** No. The movements were quite small.

13 **MR. PORRITT:** And if I could show the witness
14 Slide 12.

15 (Document displayed.)

16 **BY MR. PORRITT**

17 **Q.** Does this show your calculations of artificial inflation
18 for the convertible notes during the class period?

19 **A.** Yes. And, indeed, it's not just the total artificial
20 inflation, but it also offers you a view into what the direct
21 artificial inflation is, which would allow you to calculate the
22 consequential inflation associated with the three convertible
23 bonds.

24 **Q.** Okay. Thank you.

25 **MR. PORRITT:** At this point, Your Honor, that

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1 concludes my primary examination.

2 **THE COURT:** All right. We'll go ahead and take our
3 break at this point. We will take a 20-minute break and come
4 back for cross-examination.

5 Thank you.

6 Just a reminder to the jury, please, again, do not discuss
7 this case with anyone, including amongst yourselves. Do not
8 listen to any coverage or watch any coverage, read any
9 coverage. Do not form any opinions until this case is
10 submitted to you for deliberation.

11 We'll see you in 20 minutes.

12 **THE CLERK:** All rise for the jury.

13 (Jury exits the courtroom at 12:40 p.m.)

14 **THE COURT:** Okay. See you shortly.

15 (Whereupon there was a recess in the proceedings
16 from 12:40 p.m. until 1:05 a.m.)

17 **THE COURT:** Before we get started, I want to remind
18 the parties, we need to get -- if you're going to have redacted
19 exhibits entered into evidence, we need to have that done
20 timely, especially as we're getting towards the end. We can't
21 keep having stuff straggle in. It's got to be done.

22 So I don't know what's left. I don't know if there's
23 more, but I want to get that in the record and cleaned up.

24 **MR. APTON:** Your Honor, I was in touch with
25 Silver Lake counsel. I assume that's the -- what you're

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1 referring to?

2 **THE COURT:** Is that the only one left that needs to be
3 redacted?

4 **MR. APTON:** As far as I know. And then I was also in
5 touch with defense counsel. We're waiting for defense
6 counsel's position on it, and so we're just working through it.

7 **THE COURT:** Well, I'd like you to meet today and get
8 it straightened out.

9 **MR. APTON:** Understood, Your Honor.

10 **THE COURT:** Okay?

11 All right. Let's call the jury back.

12 (Jury enters the courtroom at 1:06 p.m.)

13 **THE COURT:** Have a seat, everyone. Welcome back.
14 We're now proceeding to cross-examination of the witness.
15 You may proceed, Mr. Rossman.

16 **CROSS-EXAMINATION**

17 **BY MR. ROSSMAN:**

18 **Q.** Very good. Good afternoon, Professor.

19 **A.** Good afternoon, Mr. Rossman.

20 **Q.** Nice to see you again in person this time.

21 You were hired in this case, Professor, by lead counsel
22 Levi & Korsinsky in the summer of 2020; correct?

23 **A.** Yes.

24 **Q.** Okay. And by that time Levi & Korsinsky had already filed
25 the class action Complaint in this case; true?

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1 **A.** I don't recall.

2 **Q.** You had no role in preparing the Complaint; right?

3 **A.** I had no role in preparing the Complaint.

4 **Q.** And at the time that you were hired, you already knew that
5 they were alleging a class period that went from August 7th to
6 August 17th, 2018; true?

7 **A.** I don't recall.

8 **Q.** You don't recall that?

9 **MR. ROSSMAN:** Can we have the deposition transcript
10 and the exhibits, please? I'm going to hand up a bundle.

11 If I may, Your Honor, approach.

12 **THE COURT:** All right.

13 **MR. ROSSMAN:** These are exhibits for the witness for
14 cross-exam, and your reports so they're handy, and then your
15 deposition testimony. And I'll let you know what, if any, of
16 those I need.

17 (Whereupon documents were tendered to the witness.)

18 **BY MR. ROSSMAN**

19 **Q.** And if you would, sir, turn to the transcript of your
20 deposition in 2021. Do you have that?

21 **A.** 2021?

22 **Q.** I'm sorry, sir. Is that --

23 **A.** Where will I find that? I'm sorry.

24 **Q.** In the deposition. You should be in the March 2022. Do
25 you see the transcript of a deposition?

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1 A. March -- March 18th, 2022, yes.

2 Q. That's the one. Apologies for getting the year wrong.

3 If you look at Page 92, starting Lines 20 through 25, let
4 me ask you, sir: Does that refresh your recollection that you
5 were given the Complaint and asked to assume the class period
6 of August 7th through August 17th?

7 A. Where am I looking? What lines?

8 Q. If you would, Professor, Page 92 --

9 A. Okay.

10 Q. -- Lines 20 through 25.

11 I'm going to move quick today, so please try to follow me
12 as best you can.

13 A. Correct.

14 Q. Now, you were paid -- you and your team were paid for the
15 opinions you gave in this case over \$500,000; is that right?

16 A. Yes.

17 Q. It is, in fact, your primary professional occupation in
18 terms of how you spend your time to be a professional expert
19 witness; true?

20 A. Over the -- since 2004; but prior to that, I was an
21 academic. I ran a public company.

22 Q. I'm asking you about today.

23 A. Pardon?

24 Q. Your primary professional occupation today is to be an
25 expert witness, an expert consultant; true?

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1 A. True.

2 Q. And you were hired by the Levi & Korsinsky firm before for
3 that purpose; right?

4 A. Before 2020?

5 Q. In other cases.

6 A. I have been hired by Levi & Korsinsky in other cases, yes.

7 Q. In other securities class action cases like this one?

8 A. Yes.

9 Q. Okay. And in the report that you provided in this case
10 that set forth your opinions, you used the same class period
11 that was alleged by plaintiffs in their complaint; right?

12 A. Well, I've written multiple reports.

13 Q. Your original report in this case you have in front of
14 you. It's quite -- it's the long one. It's 169 pages. Do you
15 have that?

16 A. This is -- this is the report on class certification?

17 Q. No, no. This is the report on causation and damages.

18 A. Oh, okay. You said "the report." I'm sorry. That was
19 unclear.

20 Q. Understood.

21 A. Okay.

22 Q. You understand we're here talking about the -- primarily
23 the testimony that you gave today was regarding the report that
24 you gave that is in front of you. I think it's Exhibit 375 for
25 identification.

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1 **A.** Okay. But -- yes, but I have written other reports, sir.

2 **Q.** I'm well aware of that. Well aware that, sir.

3 Hopefully -- well, we'll see what we need as the testimony
4 goes.

5 Am I right, sir, that in your report the class period that
6 you opined on, same class period that plaintiffs alleged in
7 their complaint, August 7th through 17th, 2018?

8 **A.** Yes.

9 **Q.** Okay. And you testified on direct that what you describe
10 as total artificial inflation in Tesla stock was \$66.67. Am I
11 getting that number right?

12 **A.** As of August 7th, 2018.

13 **Q.** Okay. Well, to be clear, sir, Tesla's stock price didn't
14 actually go up \$66.67 on August 7th following Mr. Musk's
15 statements, did it?

16 **A.** No. I demonstrated it went up by a statistically
17 significant amount of \$23.27.

18 **Q.** 23.27. If we can take a look at your Slide 47, just so
19 it's handy, but we can remember the number 23.27.

20 (Document displayed.)

21 **BY MR. ROSSMAN:**

22 **Q.** That is -- if I understand your testimony, sir, \$23.27 is
23 the amount of Tesla-specific increase the stock experienced on
24 August 7th according to you?

25 **A.** Yes.

1 Q. Okay. So if I may, the 66.67 damage figure, if I'm
2 understanding your testimony, was based on an adjusted stock
3 price of 312.90; right?

4 A. Yes.

5 Q. But you're not opining, are you, sir, that absent
6 Mr. Musk's statements on that day, Tesla stock would have sold
7 at \$312.90; correct?

8 A. No. What I'm stating is that because of the tweets, the
9 stock went up 23.27, but because of the tweets, there was
10 consequential harm that totaled 43.40 as of August 7th, 2018.

11 Q. Okay. But, sir, you agree with me, if Mr. Musk had never
12 tweeted anything at all on August 7th, there's no reason to
13 believe that the stock would have traded that day at 312.90;
14 right?

15 A. There's no reason because you likely would not have had an
16 SEC investigation. You wouldn't have had the lawsuits. And
17 you wouldn't have had the consequential harm that I've
18 documented.

19 Q. So you agree with me it wouldn't have traded at 312.90.
20 That's not what you mean when you say "but-for price;" right?

21 Let me rephrase the question to make it easier for you
22 because you seem to be struggling a little bit.

23 Absent the tweets in a world where there are no tweets at
24 all -- okay? -- am I right, sir, the stock would not have
25 traded at 312.90?

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1 **A.** Yeah. Absent the tweet, there wouldn't have been any
2 negative consequences and it wouldn't have traded at 312.90.
3 I'll agree with that.

4 **Q.** We'll have a chance to talk about that.

5 Now you used the phrase in your direct testimony
6 "interwoven bundle;" right?

7 **A.** Yes.

8 **Q.** Okay. And interwoven bundle you used to refer to all of
9 the statements that were made on August 7th by Mr. Musk; is
10 that right?

11 **A.** Yes.

12 **Q.** Okay. And you used the phrase "Musk tweets" in your
13 testimony. "Musk tweets" refers actually to a number of
14 statements on August 7th as you used it in your report; isn't
15 that right?

16 **A.** I can't recall exactly how I defined it, but I do remember
17 having a defined term called "Musk tweets."

18 **Q.** All right. So let me see if I can help you.

19 If you look at your report -- and this is Exhibit 375,
20 Page 6 -- there's a footnote there that has a definition of
21 "Musk tweets."

22 **A.** I'm sorry. Is this -- again, there are multiple --

23 **Q.** The long report that we were talking about a minute ago.

24 **THE COURT:** Where is it in the binder?

25 **MR. ROSSMAN:** It should be --

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1 **THE WITNESS:** This is not the September 22nd report.

2 **MR. ROSSMAN:** It should be Exhibit 375 for
3 identification.

4 **THE COURT:** Is that in the binder?

5 **THE WITNESS:** I don't see it.

6 **MR. ROSSMAN:** It may be separate from the binder
7 because it's not in evidence, Your Honor. The binder has
8 exhibits and separate from that.

9 You should have a copy of Professor Heston's --

10 **THE COURT:** I don't have that.

11 **MR. ROSSMAN:** I'm sorry, Hartzmark. My apologies.
12 There's a November -- do you have one? Do we have one
13 over there?

14 **THE WITNESS:** No. I have the --

15 **MR. ROSSMAN:** Let me just make the record clear.

16 **THE WITNESS:** I have an expert report here and it's
17 dated September 22nd, 2020.

18 **MR. ROSSMAN:** I see the problem. One moment.

19 **THE WITNESS:** Okay.

20 (Brief pause.)

21 **MR. ROSSMAN:** I think we have a document confusion.
22 Give us a moment, if you would, Your Honor.

23 **THE COURT:** Okay.

24 **MR. ROSSMAN:** We have -- the wrong document seems to
25 have been photocopied in that spot.

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1 **THE COURT:** Okay.

2 (Brief pause.)

3 **MR. ROSSMAN:** Why don't we show it electronically
4 while we're getting the hard copies.

5 **THE COURT:** Just to the witness to refresh his
6 recollection?

7 **MR. ROSSMAN:** Correct. Yes. That's all I want to do.
8 It's to refresh, Your Honor.

9 **THE COURT:** Good.

10 **UNIDENTIFIED SPEAKER:** Do you want to do just the
11 footnote or --

12 **MR. ROSSMAN:** 375 -- yes. It's Page 6 and Footnote 8.
13 (Displayed to witness only.)

14 **BY MR. ROSSMAN**

15 **Q.** Okay. So, Professor, what you're being shown on the
16 screen -- and I apologize while we're shuffling papers and
17 getting the right paper copy for you -- this is a copy of your
18 November 10, 2021 report, and specifically Footnote 8 in that
19 report contains a definition of "Musk tweets."

20 And I'm just giving that to you to refresh your
21 recollection about what you mean when you use that term.

22 **A.** Okay.

23 **Q.** Okay. And you actually -- when you use that term, you're
24 actually referring to six statements that you define as the
25 "Musk tweets;" right?

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1 **A.** I can't -- I can't recall. It's highly likely.

2 **Q.** All right. Well, let's take a look at them. We can
3 actually look at the statements themselves and see if it helps
4 your recollection.

5 **MR. ROSSMAN:** If we could first show Exhibit 8. It's
6 in evidence.

7 (Document displayed.)

8 **BY MR. ROSSMAN**

9 **Q.** This is one of the statements that you call a "Musk
10 tweet;" right?

11 **A.** Yes.

12 **Q.** Okay. And then I don't think that it's in evidence, but
13 you refer in your report to -- there's a tweet that's a reply
14 to a tweet that actually just has the number 420 in it replying
15 to someone else's tweet. Do you recall referring to that in
16 your report?

17 **A.** I can't recall.

18 **Q.** Okay. Put that aside.

19 **MR. ROSSMAN:** Can we turn to Exhibit 11, please.

20 (Document displayed.)

21 **BY MR. ROSSMAN:**

22 **Q.** This is one of the statements you refer to as a "Musk
23 tweet" (as read):

24 "Shareholders could either to sell at 420 or hold
25 shares and go-private."

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1 **A.** Okay.

2 **MR. ROSSMAN:** Exhibit 8, please.

3 (Document displayed.)

4 **BY MR. ROSSMAN:**

5 **Q.** Mr. Musk is replying to a tweet and says (as read):

6 "Yes, but liquidity events would be limited to every
7 six months or so like SpaceX."

8 That's one of the items that you defined in your report as
9 "Musk tweets"?

10 **A.** Again, I can't recall.

11 **Q.** Okay.

12 **A.** It's well over a year ago.

13 **MR. ROSSMAN:** Exhibit 12.

14 (Document displayed.)

15 **BY MR. ROSSMAN**

16 **Q.** Okay. This is the blog post that was posted on
17 August 7th. Do you recall that this is one of the statements
18 that you defined as a "Musk tweet"?

19 **A.** Yes.

20 **Q.** Okay. And then I believe the final tweet is Exhibit 13
21 (as read):

22 "Investor support is confirmed. Only reason why this
23 is not certain is that it's contingent on a shareholder
24 vote."

25 That's one of the statements that you defined; right?

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1 A. Yes.

2 Q. And that's your interwoven bundle, all those statements
3 together; right?

4 A. Again, I can't totally recall exactly which of those
5 tweets, but it would make sense that's an interwoven bundle.

6 Q. Okay. And you're aware, sir, that of those six
7 statements, the jury has been told to assume that just the last
8 two words of the first tweet and the final tweet that's up
9 there are untrue and inaccurate; right?

10 A. That's my recollection, yes.

11 Q. Okay. But everything else that was tweeted that you
12 define as part of that interwoven bundle -- okay? -- everything
13 else is not being challenged in this case as untrue; are you
14 aware of that?

15 A. That's my recollection.

16 Q. Okay. So "Am considering taking Tesla private at 420,"
17 for example, that's a true statement; right?

18 A. I'm sorry? What was the question?

19 Q. The statement account "Am considering taking Tesla private
20 at \$420," that sentence is true? Do you have any basis to
21 challenge that?

22 A. I guess. I mean, I can't -- I believe that Judge Chen has
23 ruled on certain portions of these being false and not false.
24 And so I guess if the opposite is that it's true, I believe
25 "funding secured" is -- was ruled as false and "investor

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1 support is confirmed. Only reason why this is not certain is
2 that it's contingent on shareholder vote" is also false.

3 Q. What was my question, Professor?

4 A. Well, I guess I'm just saying "Am considering taking Tesla
5 private" at this dollars be true.

6 Q. Thank you.

7 And in your report, sir -- and let's be clear. This is a
8 169-page report; right?

9 A. Again, it's well over a year ago. I -- it's a long
10 report.

11 Q. Okay.

12 A. I don't have the report.

13 Q. I can --

14 A. I'm sorry.

15 Q. I can represent to you, you have no basis to doubt me when
16 I tell you your signature appears on Page 169.

17 A. Okay.

18 Q. Okay. Hundreds of pages of appendices; right?

19 A. I didn't --

20 Q. Hundreds of pages of appendices behind this report; right?

21 A. Well, there were just 154 I know just in the chronology
22 that listed the record of articles, analyst reports, and such.

23 Q. Lots of data; right?

24 A. Lots of data.

25 Q. Okay. And in your report, Professor, you did no analysis

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1 that allows you to separate how much the market moves in Tesla
2 securities were attributable to the statement "Am considering
3 taking Tesla private at \$420" versus the "funding secured"
4 portion of that tweet; right?

5 **A.** I thought I was clear about that; that it's an interwoven
6 bundle. And from a quantitative standpoint and as it relates
7 to issues of my regression and data analysis, I was -- I can't
8 separate the two words from the other six and the number.

9 **Q.** So the answer to my question is no. In fact, you did not
10 do any analysis to separate that truthful statement "Am
11 considering taking Tesla private at 420" from the challenge
12 statement "funding secured."

13 **A.** I think that's misstating what I wrote. First of all --

14 **Q.** Okay.

15 **A.** -- I wrote that it was an interwoven bundle. Okay? I did
16 also, I think in my deposition testimony, possibly in my
17 report, suggest that "Am considering taking Tesla private at
18 420" would be considered to have already been incorporated in
19 the market price pre-tweet. Okay?

20 And I discussed that and I discussed it in -- because
21 there is evidence, I believe, that Mr. Musk had previously
22 indicated his interest in taking Tesla private, and the -- the
23 premium of 20 percent is a common and reasonable premium.

24 So I -- I never separated them, but I did suggest that
25 there's a possibility that that might be basically already

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1 incorporated in the price and so the only new piece of
2 information would be "funding secured," but I did not run a
3 regression that somehow separated the industry, the market, and
4 "Am considering taking Tesla private at 420."

5 **MR. ROSSMAN:** Could we play the clip -- and,
6 Your Honor, for impeachment I'm offering deposition transcript,
7 March 2022 deposition, Page 147, starting at Line 15 through
8 21.

9 And with Your Honor's permission, I'll play that.

10 **THE COURT:** Hold on.

11 **THE WITNESS:** Which one?

12 **MR. ROSSMAN:** Your March 2022 deposition starting at
13 Page 147, Line 15 through Line 21.

14 **THE COURT:** I'm going to look at it.

15 (Brief pause.)

16 **MR. PORRITT:** Your Honor, we would object for
17 completeness. We would want it to start at Line 1.

18 In fact, we would suggest Page 146, Line 2, the start of
19 the examination.

20 (Brief pause.)

21 **MR. PORRITT:** Plus, I don't think this is inconsistent
22 with his testimony.

23 **MR. ROSSMAN:** Your Honor --

24 **THE COURT:** For completeness sake, you're going to
25 play 147, Line 2 through 147, Line 22.

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1 **MR. ROSSMAN:** The only thing I would raise a caution,
2 Your Honor, there's a reference -- we've talked about this
3 before. There's a reference to another individual, if you look
4 at Line 12. We don't think it's appropriate --

5 **THE COURT:** Line 12.

6 **MR. ROSSMAN:** -- so we object.

7 (Brief pause.)

8 **MR. ROSSMAN:** We had this problem throughout the
9 deposition.

10 **MR. PORRITT:** Well, that seems to be just a rationale
11 to cherrypick and not play complete excerpts, Your Honor.

12 **THE COURT:** I don't see what the prejudice is. Go
13 ahead and play it.

14 **MR. ROSSMAN:** Well, it's a burden-shifting issue, but
15 we can go ahead and play it.

16 **THE COURT:** Play it.

17 (Brief pause.)

18 **MR. ROSSMAN:** Actually, why -- I don't think we have
19 the whole thing clipped. So let's just for efficiency put the
20 testimony up on the screen. If we can put the text up on the
21 screen?

22 **THE COURT:** Okay. Line 2, Page 146.

23 **MR. ROSSMAN:** I'm confused. Are we starting Line 2,
24 146, Your Honor?

25 **THE COURT:** Yes.

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1 **MR. ROSSMAN:** It's two pages you want to have the
2 witness read?

3 **THE COURT:** Yes. He's not going to read it. You're
4 going to read it.

5 Are you refreshing or are you impeaching?

6 **MR. ROSSMAN:** I'm trying to be efficient, Your Honor.
7 If you want me to read the whole thing, I'll read the whole
8 thing.

9 **THE COURT:** If you want to use for impeachment, you
10 can read the whole thing.

11 **MR. ROSSMAN:** Let's give the witness a chance to read
12 it, and I'll use it as refreshing.

13 **THE COURT:** If you could just read that. Read it,
14 Mr. Hartzmark, those two pages to yourself, and then you'll be
15 asked a question after that.

16 (Witness complied.)

17 **THE COURT:** Okay. Are you finished reading it?

18 **THE WITNESS:** Yes.

19 **THE COURT:** Ask your question.

20 **BY MR. ROSSMAN**

21 **Q.** Professor, does that refresh your recollection that, in
22 fact, in your report there is no analysis that separates the
23 impact on the movement of Tesla securities between the truthful
24 statement "Am considering taking Tesla private at \$420" versus
25 the challenge statement "funding secured"?

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1 **A.** I thought I answered that question. No, I -- it's an
2 interwoven bundle. I treat them together.

3 **Q.** Right. So that answers my question.

4 I'm correct, then, that there is no analysis that
5 separates them because you treat them as an interwoven bundle?

6 **A.** Yes. From an empirical standpoint, yes.

7 **Q.** Very good.

8 Okay. Now, it's also true, Professor, that you can't
9 separate out the movement in the price based on any specific
10 statements that were made on August 7th from any other
11 statements that were made that day; right?

12 **A.** It's not quite true. I haven't done it, but you can see
13 that there is a price increase after the first tweet that is
14 dramatic and a price increase after trading halted that is
15 dramatic. And then -- you know, but I -- again, to me, I've
16 looked at it as an interwoven bundle.

17 **Q.** Okay. So let's take the trading halt for a second. You
18 agree with me, Professor, that there's -- you have not -- let's
19 take this one step at a time.

20 You haven't actually tried to separate out any of the
21 statements, even though potentially you could have separated
22 the statements made before this trading halt from statements
23 made during the trading halt; is that fair?

24 **A.** I don't know if I could have. I'm saying that there is
25 this trading halt. I have not evaluated it. I mean, you would

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1 want it -- part of the issue was the price -- there was a
2 trading halt. So it's not clear that the -- that the
3 information from the first tweet had been fully incorporated.

4 But, again, I did not -- as stated -- as I stated, I did
5 not separate the different words. I didn't take the eight
6 words in the first tweet and the number and separate out
7 "funding secured." And I thought I made that clear from a
8 quantitative standpoint. I did look at issues associated with
9 qualitative.

10 **Q.** Totally understood.

11 And all I was asking in the follow-up question was: There
12 were other statements that we saw that day that you defined as
13 the "Musk tweets," the blog post, for example, the later tweet
14 that day. Okay? It happened during the trading halt --

15 **A.** Exactly. That happened during the trading halt and --

16 **THE COURT:** Hold on.

17 **MR. ROSSMAN:** Let me finish my question.

18 **THE COURT:** Hold on. Hold on.

19 **MR. ROSSMAN:** Let me just finish the question.

20 **THE WITNESS:** Yes.

21 **THE COURT:** Each of you, do not talk over the other.

22 You make it impossible for the court reporter.

23 **THE WITNESS:** I'm sorry, Your Honor.

24 **BY MR. ROSSMAN**

25 **Q.** Professor, I will -- if you allow me to finish my

HARTZMARK - CROSS / ROSSMAN

1 question, I promise you I'll allow you to finish your answer.
2 Okay? And apologies if I talk over you. Let's try again to
3 make a clear record.

4 Okay. We talked about the first tweet. Okay? You also
5 didn't separate out -- didn't do any analysis that separates
6 out the market movements from the other statements made that
7 day; right?

8 **A.** Yes. And what I was saying is that a number of them took
9 place when there was no market to be moved.

10 **Q.** Very good.

11 Give me one second, Professor.

12 (Brief pause.)

13 **Q.** Now, you have observed -- you're aware of academic
14 research that shows that the announcement of a potential deal
15 or a potential transaction has impact on the stock price;
16 right? You're aware of that research. You cite it in your
17 report.

18 **A.** There is generalized research about the announcement of
19 various corporate transactions; and if they're new and
20 unanticipated, then you would expect there to be a price
21 movement.

22 **Q.** Okay. So the announcement of a potential buyout or a
23 potential deal at a premium to the market price, all other
24 things being equal, you would expect to move the stock price
25 up; right?

HARTZMARK - CROSS / ROSSMAN

1 **A.** If that information had not been incorporated into the
2 price and it was unanticipated and new information, yes, you
3 would expect there to be a price impact.

4 **Q.** Okay. Now, Professor, we talked about August 7th. I now
5 want to talk about information that came into the market in the
6 time period between August 8th and August 17th. Okay?

7 **A.** Okay.

8 **Q.** Follow me?

9 On August 7th, we saw this in your slides, closing price
10 that day was \$379.57; right?

11 **A.** I believe so, yeah.

12 **Q.** Okay. And the closing price -- and we can -- if you need
13 to, you can refer to your report or one of your slides.

14 We look at August 13th, for example, one of the dates in
15 the class period, the closing price that day was \$356.41.

16 **A.** Can I --

17 **Q.** Do you need to look at something?

18 **A.** I was going to say if I had my report, I could look at the
19 tables there, but --

20 **Q.** I have it. We now have it.

21 **A.** Or if you can put up the tables. I just -- I don't want
22 to get it wrong.

23 **MR. ROSSMAN:** Sorry. Okay. May I, Your Honor?

24 **THE COURT:** Yes.

25 **MR. ROSSMAN:** Apologies for the mix up.

HARTZMARK - CROSS / ROSSMAN

1 **BY MR. ROSSMAN:**

2 **Q.** This, I believe is your report.

3 **A.** Okay. Thank you.

4 (Whereupon document was tendered to the witness.)

5 **THE COURT:** So you want to refer the witness to the
6 proper table? Or maybe you know it.

7 **MR. ROSSMAN:** I'm not -- I'm going to try to make it
8 quick. I don't think there's any controversy around what the
9 stock price was on the 13th, but I just wanted to give the
10 witness that so he's got it handy. Okay? It may be easiest.

11 **THE COURT:** Do you know where to look?

12 **MR. ROSSMAN:** Yeah, yeah.

13 **THE WITNESS:** Table 5, Page 103.

14 **THE COURT:** All right. If you know where to look,
15 then --

16 **BY MR. ROSSMAN**

17 **Q.** It's in Table 1 in your report, Table 5. There's a number
18 of places where you can find it.

19 Are you situated now, Professor?

20 **A.** Yes. I can at least verify.

21 **Q.** Okay. So, again, 379.57 was closing price on the 7th; is
22 that correct? And 356.41 is the closing price on the 13th?

23 **A.** Is that a question?

24 **Q.** Yeah. Am I getting the numbers right? 356.43 -- 356.41,
25 rather, was the closing price on the 13th?

1 **A.** Yes.

2 **Q.** Okay. And you agree, do you not, Professor, that the
3 difference between 379, approximately, on the 7th and 356 on
4 the 13th, that that difference over that span of trading days
5 was not statistically significant at the level that you
6 testified Courts require?

7 **A.** It was not statistically significant.

8 **Q.** Okay. So --

9 **A.** And that's based on recollection. I'm pretty sure it was
10 not, but it's -- yes.

11 **Q.** Tesla is a volatile stock; right?

12 **A.** Pardon?

13 **Q.** Tesla --

14 **A.** Right.

15 **Q.** -- was a volatile stock in 2018?

16 **A.** I believe it would have required a -- there's one, two,
17 three, four -- it would have been the square root of 4 times
18 about 5 percent for it to be statistically significant.

19 I don't have the cumulative return there, but my -- again,
20 this was a report written over here. My recollection is a
21 cumulative abnormal return is not statistically significant as
22 of August 13th, 2018.

23 **Q.** Okay. So to simplify for those of us who don't have as
24 much math as you do, Professor --

25 **A.** I'm sorry.

HARTZMARK - CROSS / ROSSMAN

1 **Q.** -- the movement in the stock price from the 7th to the
2 13th -- okay? -- you can't say with the confidence of that
3 bright line statistical significance rule that you described,
4 you can't say that that was something other than chance?

5 **A.** The statistical test in total isolation from anything
6 else, meaning that it's not linked from a material
7 statistically significant price increase prior to the tweet is
8 such that, yes, based on a bright line 95 percent confidence
9 interval, that means that it's -- it's inside the bounds of
10 what's expected by chance, I can't say that.

11 Now, I will note --

12 **Q.** That was my --

13 **A.** -- that in a one's day return --

14 **THE COURT:** Hold on.

15 **MR. ROSSMAN:** I think he answered my question.

16 **THE COURT:** You've answered the question. Your
17 attorney can bring up any further elaboration.

18 **THE WITNESS:** Oh, okay.

19 **MR. ROSSMAN:** Now, could we have Exhibit 53, please.

20 (Document displayed.)

21 **BY MR. ROSSMAN**

22 **Q.** I want to focus your attention on what happened on
23 August 13th. Okay?

24 This is one of the things that you referred to in your
25 report. It's the blog post that Mr. Musk posted that day;

1 right?

2 A. Yes.

3 Q. And if you look at the third question towards the bottom,
4 he poses the question: "Why did I say 'funding secure';
5 right?

6 A. Yes.

7 Q. Okay. And he goes through his explanation for why he said
8 "funding secured." We've seen this before Okay?

9 And if we look at -- pardon me.

10 MR. ROSSMAN: Can we scroll down a little bit? It
11 goes onto the next page.

12 Okay. Okay. You skipped past it. I'm sorry. The page
13 is broken up at the bottom with the line.

14 BY MR. ROSSMAN:

15 Q. If I draw your attention to the paragraph at the bottom --
16 okay? -- Mr. Musk writes (as read):

17 "I left the July 31st meeting with no question that a
18 deal with the Saudi sovereign fund could be closed, and it
19 was just a matter of getting the process moving. This is
20 why I referred to 'funding secured' in the August 7th
21 announcement."

22 You saw that; right?

23 A. Yes.

24 Q. Okay. And in this blog post he talks about the investment
25 being subject to diligence, an internal review process, and so

1 forth; right?

2 **THE COURT:** You might want to scroll down to that part
3 so he can see it.

4 **BY MR. ROSSMAN:**

5 **Q.** Do you want to see it?

6 (Document displayed.)

7 **BY MR. ROSSMAN**

8 **Q.** You have that in front of you; right, sir? You're
9 familiar with this?

10 **A.** Yes, but I have -- in this little brain, I've got 2400
11 other documents, so I apologize if I don't remember every
12 detail.

13 **Q.** Well, this one was a pretty important one, wasn't it?

14 **A.** Yes. But you're asking me a very specific question, sir.

15 **Q.** You saw a reference in that document to the managing
16 director of the Saudi fund having "expressed support for
17 proceeding subject to financial and other due diligence and
18 their internal review process;" correct?

19 **A.** Yes.

20 **Q.** And it was your opinion that by virtue of this blog post
21 as of August 13th -- okay? -- the market knew, investors now
22 know that his, quote, "funding secured," close quote, tweet was
23 premature at best. Premature at best was your opinion; right?

24 **A.** Again, the -- what I had suggested is -- first of all,
25 there are two components --

HARTZMARK - CROSS / ROSSMAN

1 **Q.** Did you give that opinion, sir, or not?

2 **A.** Okay. That -- what's the question again?

3 **Q.** You gave the opinion in your report -- okay? -- that as of
4 August 13th, by virtue of that blog post, investors now know
5 that his "funding secured" was premature at best?

6 **A.** Yes. My recollection is such, yeah.

7 **Q.** Okay. And could we take a look at what happened to the
8 price of Tesla stock that day? It's in your report at
9 Paragraph 100, if you want to reference it.

10 **A.** Okay. I was waiting for the screen.

11 **THE COURT:** Are you going to put something up on the
12 screen?

13 **MR. ROSSMAN:** We can.

14 Do you have the report Pages 71, 72, Exhibit 375?

15 (Document displayed.)

16 **BY MR. ROSSMAN**

17 **Q.** Okay. That was your testimony in your report; right?

18 (As read):

19 "Investors now know this 'funding secured' tweet last
20 week was premature at best."

21 Right?

22 **A.** Okay.

23 **Q.** Okay. And according to your report, Tesla's share price
24 opened at 361.13, a 1 percent increase from the prior day;
25 right?

HARTZMARK - CROSS / ROSSMAN

1 **A.** I don't recall. Can you point to where I said that?

2 **THE COURT:** Do you see the screen?

3 **BY MR. ROSSMAN**

4 **Q.** Do you see first sentence of Paragraph 100 of your report?

5 **A.** Okay.

6 **THE COURT:** If you look at the screen, Professor, it's
7 highlighted there.

8 **A.** Yes.

9 **BY MR. ROSSMAN:**

10 **Q.** Okay. And close to close from the 13th to -- from the
11 prior day's close to close on the 13th, stock went up; right?

12 **A.** On the -- you mean, from 352 to -- I'm just -- this is,
13 oh, August 13th? August 13th. Prior day close 355. It went
14 up from 355 to 361, yes.

15 **Q.** Okay. So despite, according to you, the market learning
16 that day that "funding secured" was premature at best, the
17 stock price went up; true? True or false?

18 **A.** The stock price went up, but there's more than just this,
19 and it's not clear that that's a revelation of the truth.

20 **Q.** Well, that's what you said in your report, "premature at
21 best;" right?

22 **A.** I said "it's premature at best," but the jury can decide
23 if that's fully revealing the truth about the "funding secured"
24 tweet.

25 **Q.** Well, you're aware, sir, there's no allegation in this

1 case that the August 13th blog post was false; right? You're
2 aware of that, are you not?

3 **A.** I didn't say that it was false. Does it reveal -- there's
4 a difference between revealing the full truth and being false.

5 **Q.** Okay. Now, the -- you -- your conclusion was that blog
6 post told the investing world that "funding secured" was not
7 true; right? That's your conclusion?

8 **MR. PORRITT:** Objection. I don't think that states
9 the conclusion.

10 **MR. ROSSMAN:** Let me rephrase the question and
11 alleviate the objection.

12 **THE COURT:** Hold on. Hold on.

13 I'm not sure what time you're talking about. Can you
14 rephrase that?

15 **BY MR. ROSSMAN**

16 **Q.** On the 13th, on the 13th of August, it was your opinion --
17 okay? -- that that blog post told the investing public that
18 "funding secured" was premature at best; right?

19 **A.** Yes. It was premature at best, but that's not necessarily
20 fully revealing what was misstated on the August 7th tweet.

21 **Q.** That's the -- the rest of the August 7th tweet is not even
22 challenged as being false; right? Just the "funding secured"
23 portion; is that true?

24 **A.** Well, this also deals with "investor support confirms."

25 So you started asking me about the "Musk tweets." This

HARTZMARK - CROSS / ROSSMAN

1 particular article is two important things. One is it suggests
2 that 66 percent of the investors will flip over; and, two,
3 again, I -- whether my personal -- whether "premature" means
4 fully revealed or not, the market did not appear to believe
5 that it was fully revealed.

6 Q. So the market didn't agree with you; is that your
7 testimony?

8 A. Say that again.

9 Q. Are you saying -- are you suggesting that the market
10 didn't agree with you?

11 I'm sorry. I didn't understand your testimony, sir.

12 A. No, no, no.

13 Q. Are you suggesting --

14 A. I mean, the market is made up of differences of opinions.
15 That's the whole idea. And what I'm saying is the market
16 suggests, if you look at the implied volatility and you look at
17 the prices, that there is no -- no revelation of the truth,
18 full revelation of the truth about "funding secured" and that
19 "investor support is confirmed" on August 13th.

20 Q. Well, sir --

21 A. That's all I said, and I went through that in my
22 testimony.

23 Q. You don't know any of the underlying facts. You weren't
24 in meetings with the Saudi PIF in 2018; right?

25 A. I was not.

HARTZMARK - CROSS / ROSSMAN

1 Q. Okay. If the jury has heard the evidence, concludes
2 otherwise, concludes that that blog post was truthful and
3 revealed the underlying facts -- okay? -- then the market knew
4 all there was to know about investor -- about -- sorry, about
5 "funding secured;" right?

6 A. Again, I -- I thought we had gone through the so-called
7 "Musk tweets," and there was more than just "funding secured."

8 Q. I'm asking you about "funding secured."

9 A. Oh, about "funding secured." If the jury determines that
10 funding is secured and this reveals it fully, then it reveals
11 it fully. There's still other components to this blog post.

12 Q. Very good.

13 Now, I want to take a look at your slide 11, if we could,
14 for a moment.

15 **MR. ROSSMAN:** Can we put that up?

16 (Document displayed.)

17 **BY MR. ROSSMAN**

18 Q. One of the things -- one of the things that you did was
19 you did an event study and regression analysis to eliminate the
20 noise of other market and industry factors and isolate Tesla
21 specific stock price movements; true?

22 A. Yeah.

23 Q. Okay?

24 A. Yes.

25 Q. And now let's take a look at your Slide 11.

1 This is where you indicate the artificial inflation each
2 day; is that right?

3 A. Yes.

4 Q. Okay. And if I followed your example, if we -- imagine
5 someone who bought the stock on the 7th and sold on the 13th
6 for a moment; right? So if -- what you said is you take the
7 artificial inflation on the day they bought and subtract out
8 the artificial inflation on the day they sold; right?

9 A. Yes. If you're doing an out-of-pocket damages analysis.

10 Q. Okay. So if you'll allow me to do some math. You're
11 going to help me make sure I get my math right. Okay?

12 The artificial --

13 A. Let me get my reading glasses. Please write big.

14 Q. I'm going to call it out, so you'll know what I'm saying.

15 Someone who bought on the 7th and sold on the 13th, the
16 day of the blog post we're talking about, suffered, if you
17 will, artificial inflation of \$66.67, when they sold artificial
18 inflation of 43.51. Their damage would be the difference
19 between those two, subtracting 66.67 from 40.51; right?

20 A. Correct.

21 Q. And that number -- am I right, Professor, that that number
22 is \$23.16? You'll check my math.

23 A. I don't have any calculator, but it looks right.

24 Q. Okay. And everyone will forgive my terrible handwriting.

25 A. I cannot see.

HARTZMARK - CROSS / ROSSMAN

1 Q. It is \$23.16; right?

2 Now, I want you to observe the column on the left, stock
3 price on that day, okay? Do you see that?

4 A. The stock price on which day?

5 Q. The stock price -- I'm sorry. Good question. The stock
6 price column indicates the actual traded price on a given day;
7 right?

8 A. Yes.

9 Q. Okay. So on the 7th, a person bought at 379.57. On the
10 13th would have sold at 356.41; right?

11 A. Yes.

12 Q. Help me with my math again. Am I right, Professor, if you
13 subtract those two, it's \$23.16?

14 A. Yes.

15 Q. Okay. And that's the difference, okay? I'll call this
16 the actual stock difference. All right. I have bad
17 handwriting under good circumstances. On a shaky board it's a
18 disaster.

19 That is the same \$23.16; right? You're looking confused.
20 Same 23.16; right?

21 A. I just don't know if this is a coincidence or -- okay.

22 Q. You're looking confused, Professor, because you know
23 that's wrong; right?

24 A. That the decline in the stock?

25 Q. The math is --

HARTZMARK - CROSS / ROSSMAN

1 **A.** No, no. The full decline is --

2 **THE COURT:** One at a time. One at a time.

3 **BY MR. ROSSMAN**

4 **Q.** Please. Go ahead, Professor.

5 **A.** The full decline is the inflation coming out of the stock.
6 I mean, you're subtracting a constant but-for. So I think
7 mathematically it's got to be equal.

8 **Q.** Okay.

9 **A.** Because you take 379.57 minus 312.90. That's inflation.
10 356.41 minus 312.90. And then you subtract those two. So the
11 312.90 minus 312.90 equals zero, and you're left with, yeah,
12 the difference between the stock price.

13 And I think I described that to the jury this morning,
14 that -- when the stock price falls, you're eliminating the
15 inflation.

16 **Q.** Now, Professor, what's missing? Why are those two numbers
17 wrong and every number in your slide is wrong?

18 I'll give you a minute.

19 (Brief pause.)

20 **THE COURT:** What's the question?

21 **BY MR. ROSSMAN**

22 **Q.** Why are those numbers wrong?

23 **THE COURT:** "Those numbers" meaning?

24 **BY MR. ROSSMAN**

25 **Q.** Why is it wrong for the number of the difference in the

HARTZMARK - CROSS / ROSSMAN

1 actual stock price, 23.16, why is it wrong for it to be the
2 same number as what you say should be the damage calculation
3 for someone who bought on the 7th and sold on the 13th?

4 **A.** That's their damage. The but-for price is fixed.

5 **Q.** Well, Professor, it's not their damage because what those
6 numbers don't do is they don't correct for market and industry
7 factors; isn't that correct?

8 **A.** They correct as of the -- the final date on 8/17/2018.

9 **Q.** Okay. So for someone who bought, in the example I gave
10 you, on the 7th and sold on the 13th, your table is wrong. You
11 can't get their damage numbers correct from using your
12 artificial inflation numbers; right?

13 (Brief pause.)

14 **A.** I can't -- say that -- what's the question again, please?

15 **Q.** For someone who bought on the 7th and sold on the 13th, it
16 doesn't accurately reflect what their damages are if you use
17 the artificial inflation numbers on your table, because you
18 haven't corrected for market and industry factors; true?

19 **A.** Well, it would be, I think, over-corrected. Because I
20 know that as of 312.90 -- or 312.90 corrects for market effects
21 as of 312.90. So it incorporates all of the market effects and
22 industry effects through this period.

23 **Q.** Right. But it doesn't correct it on the 13th.

24 **A.** The price would be -- I'd have to look at the other table.

25 **Q.** The table you're looking for is Table 19 in your slides.

HARTZMARK - CROSS / ROSSMAN

1 **MR. ROSSMAN:** Could we put up slide 19.

2 **BY MR. ROSSMAN**

3 **Q** I just wrote down on 8/13 the actual stock price was
4 356.41. Right?

5 On Table 19, what you see there is the adjusted stock
6 price. That's where you make adjustments for market and
7 industry factors. Right?

8 **A** Correct.

9 **Q** Because it has nothing to do with any allegation of fraud,
10 how the general market moves, right? And with your adjustment,
11 the actual adjusted price, the price you should have used for
12 Tesla stock was \$364.17. Correct?

13 **A** As -- instead of the actual price.

14 **Q** Okay. Adjusted, 364.17. Right? About \$8 higher, meaning
15 \$8 less of damages than your table indicated. Right?

16 **A** No, I think it's just the -- \$8, you would take the
17 adjusted price minus the but-for price. So it's \$8 -- I was --
18 I think I conservatively didn't do this, because it -- yes, it
19 would have been \$8 more inflation.

20 **Q** Well, Professor, if someone bought at 379.57 on the 7th,
21 okay --

22 **A** Well, you're -- yeah.

23 **Q** -- and sold on the 13th, price, the adjusted price on the
24 13th is actually 364.17. Right?

25 **A** Someone bought -- oh, oh, okay. I hear what you're

PROCEEDINGS

1 saying.

2 **MR. ROSSMAN:** I'm mindful of the time, and I want to
3 button this up in a question or two, Your Honor.

4 **THE COURT:** Yeah, we're at 2:00 so --

5 **MR. ROSSMAN:** Yeah, so I just have one more question,
6 if we can.

7 **THE WITNESS:** So the inflation would have to be
8 adjusted, so instead of -- 312 -- 8, 5 -- well, it -- yes, it
9 appears -- and I haven't had a chance to look at it, but for
10 this particular date, the inflation would be lower.

11 **BY MR. ROSSMAN**

12 **Q** And for that date, for the 8th, the 9th, the 10th, the
13 13th, the 14th, the 15th and the 16th, we go back to your
14 Table 11, every single one of those numbers needs to be
15 adjusted, right?

16 **A** Every -- the numbers should be adjusted.

17 **Q** Okay.

18 **MR. ROSSMAN:** Thank you, Your Honor. We could break
19 there.

20 **THE COURT:** All right. Thank you. So we'll pick up
21 tomorrow at 8:30. We are expecting to get this case to you by
22 the end of the week, by Friday. Evidence will be concluded in
23 time. So, be prepared for that. Once the case is given to
24 you, you're instructed and you hear closing arguments and the
25 case is given to you for deliberation, it is up to you as a

PROCEEDINGS

1 group to decide what times you want to go, so, for instance, if
2 you get the case on Friday and you want to stay beyond 2:00,
3 you are welcome to do so. We're here.

4 So you might think about your schedule, anticipating that
5 sometime Friday, you should be getting the case and whether you
6 all want to -- are available and want to spend -- put aside the
7 time or what. So I'm just letting you know, don't feel
8 constrained. Once it's in your hands, you're not constrained
9 by the 2:00, nor are you constrained by the Thursday off day
10 because we're here every day. Okay?

11 So, again, remember my usual admonitions. Do not talk to
12 anybody about this case, do not read or listen to any reports.
13 And do not form any opinions -- do not do any research, and do
14 not form any opinions until this case is submitted to you for
15 deliberation. We'll see you tomorrow morning. Thank you.

16 **THE COURTROOM DEPUTY:** All rise for the jury.

17 (Jury excused)

18 **THE COURT:** Okay, you can step down.

19 We should get a read on the clock because that is now a
20 factor, and so I don't know, Vicky, if you have the latest.

21 **THE COURTROOM DEPUTY:** Yes. Give me just a few
22 minutes for this last one.

23 **THE COURT:** Give her a few minutes to calculate that.

24 Let me ask what the witness plan is. So do you plan to
25 call any other witnesses for your case-in-chief?

PROCEEDINGS

1 **MR. PORRITT:** Dr. Hartzmark is our last witness,
2 Your Honor.

3 **THE COURT:** I'm sorry?

4 **MR. PORRITT:** Dr. Hartzmark is our last witness.

5 **THE COURT:** All right. So you are prepared to start
6 your case, obviously.

7 **MR. SPIRO:** Yes. Before we get into that, Your Honor,
8 and I haven't decided what the defense is going to do yet but I
9 want to just make sure that I make the record immediately
10 following the testimony that we just heard. It was obvious to
11 me, and I'm sure obvious to the Court, that the expert witness
12 is primed to inject Your Honor's ruling into this case. And
13 so, I haven't decided what the appropriate remedy is but there
14 is going to be a request from the defense for a serious remedy
15 because that was a serious violation and the plaintiffs know
16 that.

17 **MR. PORRITT:** That's complete wanton reckless
18 speculation, and quite improper by counsel.

19 **THE COURT:** Sure.

20 **MR. PORRITT:** And they opened the door with the
21 question, Your Honor. I think it was pretty --

22 **THE COURT:** All right. We'll deal with it when we
23 deal with it. So, what next? What's your plan in terms of --

24 **MR. SPIRO:** We'll be in a position to call witnesses
25 first thing in the morning.

PROCEEDINGS

1 **THE COURT:** And who are you planning to call?

2 **MR. SPIRO:** Sam Teller. As of now, you know, there's
3 directors in this case. There's no legal basis that we believe
4 for the directors to still be in this case, but there are
5 directors in this case so we're going to have to call them
6 because they're defendants and they have the burden of proof.

7 **THE COURT:** How many directors do you think you will
8 call?

9 **MR. SPIRO:** There's another four directors. And we're
10 still evaluating, depending on how the rest of the evidence
11 goes.

12 **THE COURT:** All right. Let's see if we have the time.

13 **THE COURTROOM DEPUTY:** Plaintiffs have used 16:26.
14 Defendants, 14:22.

15 **THE COURT:** All right, so that's cutting it slim. You
16 have got to preserve time, I assume, for closing.

17 **MR. PORRITT:** Absolutely, Your Honor. We will be very
18 efficient with crossing the defendant's witnesses.

19 **THE COURT:** And then you have less than four hours,
20 total, so I assume you're going to use some of that for
21 closing. So I expect maybe you have, what, about three hours
22 of -- if you wanted to use three hours of cross and direct on
23 your side.

24 So we will be able to complete our evidence by tomorrow.
25 That seems a certainty at this point.

PROCEEDINGS

1 **MR. PORRITT:** Yes, Your Honor.

2 **MR. SPIRO:** Yes, Your Honor. When will Your Honor
3 take arguments on 50(a) issues?

4 **THE COURT:** Well, you --

5 **MR. SPIRO:** Because there's -- there's -- you know, I
6 know that everybody makes them in every case. But there are
7 real ones here that we need to make sure that we have
8 addressed.

9 **THE COURT:** Well, what you should do is make your
10 motion at the close, or wherever your -- whatever you think is
11 a timing motion. I don't have to hear -- I don't want to
12 necessarily take them -- it depends on what the break is. I
13 don't want to -- you know, if we have to take it after the jury
14 leaves, I'll take it then.

15 **MR. SPIRO:** Okay.

16 **THE COURT:** But I don't want that to upset the
17 schedule of getting this case to the jury on Friday.

18 **MR. SPIRO:** Understood. And, then, would Your Honor
19 be willing to -- let's say there is enough time on Wednesday.
20 Would Your Honor be in a position to instruct Wednesday, so
21 that we get right to summations on Friday so that they have a
22 full day, essentially?

23 Because the instructions are done, and, you know, not
24 saying that there aren't, you know, other cases in other
25 places. But if the jury can have a full day on Friday, I,

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1 think given their time, and all the time taken from a lot of
2 people for this matter, that that would be ideal. So I just
3 wanted to put that idea into the Court's mind.

4 **THE COURT:** Okay. Well, that partly depends on
5 whether you're going to use your full --

6 **MR. SPIRO:** Sure.

7 **THE COURT:** If you do --

8 **MR. SPIRO:** That's why I didn't want to surprise you.

9 **THE COURT:** Because I've got to leave, what, about 45,
10 50 minutes? If there is time, I'd rather get as much done as
11 we can. So if there is time, I would prefer to actually give
12 the instructions. That means I need -- if there are
13 stipulations of fact, I need that quick.

14 **MR. SPIRO:** Yes, Your Honor, we'll have it to you.

15 **THE COURT:** And I need to now take one more look to
16 see what's relevant and what's not. That does put a premium on
17 this question that we didn't resolve about the slides.

18 Are you still intending to admit some of the slides?

19 **MR. PORRITT:** Yes, Your Honor, if I may.

20 **THE COURT:** Have you identified which ones in
21 particular you would move?

22 **MR. PORRITT:** Yeah, I can give you a list if you would
23 like, Your Honor. Would that be helpful?

24 **THE COURT:** Yeah.

25 **MR. PORRITT:** We would move to admit for Professor

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1 Heston, Slide No. 7. And then for Dr. Hartzmark, it would be
2 Slide 11, 12, 22, 24, 52, 55, 46, and 47. And there are some
3 exhibits that he, Dr. Hartzmark referred to in his evidence in
4 chief which Your Honor has ruled on objections and overruled
5 and we would -- can we move those into evidence now,
6 Your Honor?

7 **THE COURT:** All right, the ones I've already ruled
8 on --

9 **MR. PORRITT:** Yeah.

10 **THE COURT:** Yes, if I've overruled them, tell me which
11 ones they are that you move to admit.

12 **MR. PORRITT:** We would move to admit Exhibits 338,
13 429 -- trying to do these in numerical order, Your Honor, but I
14 haven't written them out that way.

15 **THE COURT:** Okay.

16 **MR. PORRITT:** 565, 570, 572, 594, 721, and 763.

17 **THE COURT:** All right. I don't have my ruling in
18 front of me, but I assume that I ruled on all of those?

19 **MR. PORRITT:** Yes, Your Honor, I believe you've
20 overruled all objections.

21 (Trial Exhibits 338, 429, 565, 570, 572, 594, 721, and 763
22 received in evidence.)

23 **MR. SPIRO:** We're checking on the numbers. Meanwhile,
24 it should hit the docket any moment, we're providing a response
25 to their motion that they filed in the middle of the day.

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1 The -- the case that they cite, and the stipulation that was
2 entered into in that one matter is as I suggested to the Court.

3 **THE COURT:** Okay.

4 **MR. SPIRO:** So we're hoping Your Honor sticks to
5 its -- the indication we got from the Court earlier.

6 **THE COURT:** All right. Let me ask you, if -- if I
7 were to decide not to admit the slides but have them -- keep
8 them as demonstratives, does your brief address the question of
9 what's an appropriate instruction?

10 **MR. SPIRO:** No. That's the issue that I -- that I
11 said I would for -- by tomorrow morning have an answer to
12 because that's a different thread. But, but, you know, I will
13 say that in my experience, if a -- a witness's full testimony
14 is to be read back or something like that, you know, it is
15 possible that a demonstrative would be shown in conjunction
16 with it, just like if a depo clip was played back.

17 And so it strikes me that there would at least be some
18 support for that notion. I'm basing that on my experience
19 trying cases. What I know is what I said earlier, that as a
20 legal matter, the jury can't be given those things. So --

21 **THE COURT:** No, I'm confident that if they were to ask
22 for either a readback or to look at a demonstrative, as I think
23 as I have the -- the authority to do so, that then the question
24 is how much -- you know, that's always the debate, do you have
25 to read the full two hours of testimony and that sort of thing,

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1 and I have to make that judgment when we get there.

2 **MR. SPIRO:** I agree with -- my instinct is exactly the
3 same as Your Honor's, that the Court would have had significant
4 discretion, and I have a feeling -- I just haven't read those
5 cases, and I just don't know it off my -- the top of my head.
6 So I tend to agree with the Court, that is what the case law is
7 going to suggest, that they rely on the discretion of the trial
8 judge.

9 **MR. PORRITT:** And, Your Honor, this is a problem of
10 defendant's own making is they could have, as in *Vivendi*, had
11 their own competing exhibits and could have been presenting a
12 competing version of inflation to the jury.

13 **THE COURT:** Well --

14 **MR. PORRITT:** But they chose not, and so that is
15 the -- that is -- that is what they are --

16 **THE COURT:** Frankly --

17 **MR. PORRITT:** They are creating this problem.

18 **THE COURT:** I will read the authorities that you've
19 cited, and I -- it appears there may be authorities on both
20 sides of this thing. But the issue, as I see it, is whether it
21 is appropriate in this case to present a -- as an exhibit, a
22 demonstrative that sort of sums up the testimony here.
23 Normally, summary evidence isn't used -- a summary chart isn't
24 used to necessarily sum up the conclusions of a particular
25 witness. It's just to put in convenient form, you know,

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1 voluminous documents.

2 I mean, I understand and I've already indicated that there
3 is a practical reason to have something there, at least in some
4 form, available to the jury because there's lots of numbers
5 here and they're going to have to figure out some of these
6 numbers. And so this is really in aid of memory, if nothing
7 else.

8 On the other hand, I understand the risk that it is sort
9 of a form of testimony that is going to be embodied and turned
10 into an exhibit, which is a bit unusual, but not necessarily
11 unprecedented.

12 **MR. PORRITT:** And just to remind Your Honor,
13 defendants wanted to include those numbers in the verdict form,
14 in their proposed verdict form. So --

15 **MR. SPIRO:** That's not exactly right. I mean -- and I
16 just want to make three other quick comments. One is basically
17 what they are trying to do is take an hour or more of testimony
18 that would be subject to cross-examination, they're out of
19 time, and summarize the opinions within a document to sort of
20 trick the clock and deprive us of cross-examination. We
21 couldn't do that with our witnesses. They can't do it with
22 theirs, and they can --

23 **THE COURT:** Well, you could have. I mean, he's
24 already testified, and testified as to the charts, and you
25 could have cross-examined him, look at that chart and --

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1 **MR. SPIRO:** So we're -- are we going to put cross --
2 are we going to staple the cross-examination? I mean,
3 they're --

4 **THE COURT:** No. I mean, you're saying you were
5 somehow deprived -- this process of turning this demonstrative
6 into exhibits somehow deprived you of right of
7 cross-examination.

8 And I -- and my observation is you've had the right of
9 cross-examination because the witness was here, essentially
10 adopted that chart. Once the witness says "Yeah, these are my
11 calculations and here's how I did it," then there's free rein
12 to go through that chart if you want.

13 **MR. SPIRO:** It's the packaging of the information and
14 the opinions in an improper way and spoonfeeding it to the jury
15 that deprives the defendant of the right to cross-examination.

16 Number two, what Mr. Porritt suggests, that we could put
17 in a competing -- competing verdict form or a competing what
18 have you is exactly the point. The burden is on them. We
19 could have thought of it, we should have thought of it; it's
20 the burden on them to prove and to demonstrate their damages
21 clearly. It's not a burden on us to come up with some counter
22 narrative to that. So that's just flat-out wrong, and that's
23 another reason why --

24 **THE COURT:** All right. Well, I'll consider the
25 briefs. We're --

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1 **MR. SPIRO:** Thank you.

2 **THE COURT:** -- repeating ourselves.

3 **MR. SPIRO:** Sure.

4 **THE COURT:** So I will look at that. I'm going to take
5 a second look at the instructions, now that I know that there's
6 a -- if you don't use all your three hours or three and a half
7 hours on witnesses, that there may well be time enough to
8 instruct tomorrow, which would get us ahead of the game a
9 little bit.

10 Vicky would like -- IT wants to test that Zoom now prior
11 to the remote thing tomorrow so that we -- we can make sure
12 that -- what does it say? We have to -- oh. I've got a
13 hearing in 15 minutes, so I don't know if you've got tech
14 people now that can test this process?

15 **THE COURTROOM DEPUTY:** Yeah, they're ready. They're
16 ready.

17 **THE COURT:** They're ready?

18 **THE COURTROOM DEPUTY:** Yeah, they're here
19 (Indicating).

20 **THE COURT:** Okay. So I've got work to do. I will
21 look at the jury instructions, I will look at this question --

22 **MR. PORRITT:** Your Honor, those exhibits that I listed
23 off, --

24 **THE COURT:** Yep.

25 **MR. PORRITT:** -- defendants were checking on

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1 objections. Are those -- are we -- we are moving them into
2 admission at this point, unless --

3 **THE COURT:** Well, if I've already ruled --

4 **MR. ROSSMAN:** I packed my notes away.

5 **MR. SPIRO:** Yeah, we will double-check the accuracy of
6 that list, and we will -- we will confer with plaintiffs.

7 **THE CLERK:** I need to know right away, too, because I
8 have to put this on my trial log.

9 **MR. SPIRO:** Of course. Thank you.

10 **THE COURT:** All right. You let her know, but I -- if
11 I've ruled on it, I mean, your objection is still preserved for
12 the record, but I've ruled on it. So that's the only question,
13 did I rule on it, and I don't have it with me.

14 **MR. SPIRO:** Understood, Your Honor. Thank you.

15 **THE COURT:** Yeah.

16 **THE COURTROOM DEPUTY:** Court is adjourned.

17 **THE COURT:** Oh, wait, before we do, plaintiffs filed
18 some proposed supplemental jury instructions this morning. So
19 I would like a response in -- you know, sometime today before
20 4:00, if you have any. I think there are two instructions that
21 you had, I think, requested; is that correct?

22 **MR. PORRITT:** Three, I think?

23 **MR. APTON:** Four.

24 **THE COURT:** Three? Four?

25 **MR. APTON:** There's two -- sorry, Your Honor. Two

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1 additional ones, and then we've modified or suggested
2 modifications to two existing ones.

3 **MR. SPIRO:** Yeah. Obviously, we have selected the
4 jury open to try the entire case under an understanding that
5 Your Honor's jury instructions were not changing. So I don't
6 understand this application at this juncture.

7 We will -- if the Court needs a response to it, we can
8 respond. I'd ask until, you know, approximately 5:00, by the
9 time that we are able to respond to this.

10 **THE COURT:** I'll give you to 4:30 because I need time.

11 **MR. SPIRO:** Thank you, Your Honor.

12 **THE COURT:** Thank you.

13 **THE COURTROOM DEPUTY:** Court is adjourned.

14 (Proceedings concluded)
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Debra L. Pas, CSR 11916, CRR, RMR, RPR



Belle Ball, CSR 8785, CRR, RDR

Tuesday, January 31, 2023